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FUNDAMENTALS
OF
MILITARY SERVICE

CAPTAIN LINCOLN C. ANDREWS, U.S. CAVALRY

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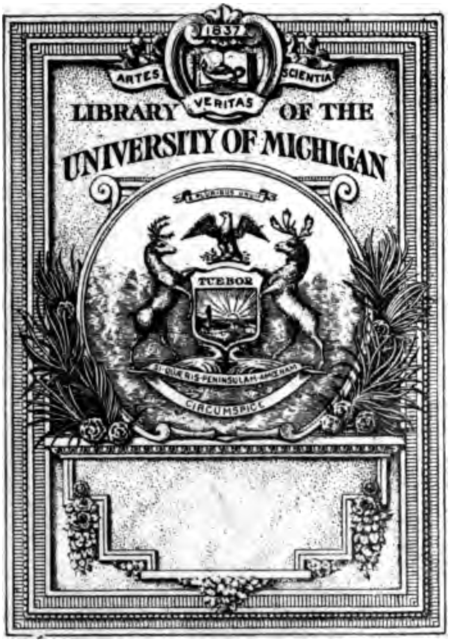
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FUNDAMENTALS
OF
MILITARY SERVICE

BY

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CAPTAIN LINCOLN C. ANDREWS, U. S. CAVALRY

PREPARED UNDER THE SUPERVISION OF

MAJOR GENERAL LEONARD WOOD, U. S. ARMY

SPECIAL CHAPTERS

ENGINEER CORPS
MAJOR S. A. CHENEY, CIVIL ENGINEER
COAST ARTILLERY
CAPTAIN C. A. KILBOURNE, COAST ARTILLERY
INFANTRY
CAPTAIN E. T. COLLINS, 10TH INFANTRY
SIGNAL CORPS
CAPTAIN C. A. SEOANE, CAVALRY
FIELD ARTILLERY
FIRST LIEUT. J. S. HAMMOND, FIELD ARTILLERY

PHILADELPHIA AND LONDON
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DEDICATION

TO THE MEMORY OF OUR FIRST PRESIDENT, WHOSE PROFOUND STATESMANSHIP DEMANDED FOR THE FUTURE OF THIS DEMOCRACY THAT HER CITIZENS BE ORGANIZED AND TRAINED IN ARMS, THIS BOOK, DESIGNED TO AID IN THAT CONSUMMATION, IS REVERENTLY DEDICATED.

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"In proportion as the structure of government gives force to public opinion, it is essential that public opinion should be enlightened."—*Washington.*

"* * * It proves more forcibly the necessity of obliging every citizen to be a soldier. This was the case with the Greeks and Romans, and must be that of every free state. * * our attention should unremittingly be fixed on the safety of our country. For a people who are free and who mean to remain so, a well organized and armed militia is their best security."—*Jefferson.*

"The militia shall consist of every able-bodied male citizen of the respective states * * * who is more than eighteen and less than forty-five years of age."—*Federal Statutes.*

PREFACE

Our once protecting sea barrier has been converted by the advances of science into the readiest and cheapest means of communication between ourselves and our trans-oceanic neighbors. Our once splendid isolation has been changed by civilization and commerce into an intimate and indissoluble inter-relation with the other peoples of the world. It is impossible to turn back, nor do the younger generation desire to. They choose rather that the nation shall take its place proudly in the councils of the world; prepared to meet unfalteringly its responsibilities, and to maintain with dignity its just standards of reasonable existence. This demands a degree of military preparedness that will secure us against invasion, and lend forcefulness to the tone when the nation speaks.

Our national policies are, in the end, dictated by private citizens through the power of public opinion; and the very life of the nation may depend on what those citizens have previously demanded in preparation for defense.

Our organic law makes military service obligatory for each male citizen between the ages of eighteen and forty-five years. This service he may not avoid, if called to its performance. It is simple folly for him so to plan his life as to have to meet this obligation unprepared, unfit physically, mentally, and morally, through lack of training; it is disloyal and cowardly for him to plan that his fellow shall perform this duty for him.

Therefore an honest performance of the duties of citizenship demands, first, that each citizen shall learn enough about the military service and its needs to give him an *intelligent opinion* thereon; and second, that each youth shall prepare himself reasonably to meet his individual responsibilities as a citizen soldier. Thus alone may we avoid having to go to war amidst such unpreparedness as must result in national humiliation, with wholesale loss of life and treasure.

This book is designed to supply the means for attaining these qualifications for citizenship, to place in one volume the fundamentals of military service, its meanings and its requirements.

With the limited time and opportunity available for training the citizen soldier, he may not hope to embrace thoroughly the whole art of war,—as does the professional. Nor should he try. Successful military leadership demands quick, unhesitating decisions, and positive plans of action carried through unfalteringly. Ability to do this can come only from *honest self-confidence,* confidence in one's own knowledge of the art, and in one's ability to apply its rules. This confidence he may attain by limiting his study and training to those things that it is possible for him to learn *thoroughly,* and by avoiding any effort to go beyond that. Hazy conceptions of many things half learned, will surely result at the critical moment in hesitation and indecision, fatal to morale and to success in battle.

It is therefore necessary to prescribe for the citizen soldier a standard of efficiency that is well within his limitations, and to furnish him the corresponding textbook and system of training. It then becomes possible for him to attain so thorough a training within these limits, as to justify an honest confidence in his ability to play his part in the requirements of actual service.

This book covers that field, and, studied in connection with Field Service Regulations, and the Drill Regulations of his chosen arm of the service, is sufficient for the training of company officers, noncommissioned officers and privates. Officers of higher grades, having this foundation, will study in a broader field to meet their requirements.

This book is not intended to be memorized and repeated in recitations. It meets rather the applicatory system, in which the student's proficiency is determined by the understanding and skill he shows in the actual practice of the subject in question; not by his ability to memorize and repeat paragraphs from the text-book. Furthermore, the great need is to convey the *spirit* and *meanings* of the service, what we are getting at and how getting at it, how to arouse, to foster, and to direct that actuating spirit which makes an organization a splendid machine for efficiency. This can hardly be done in recitation formulas—it may be in more intimate informal discussions.

In war time training every man who joins the colors will come highly resolved to make himself a good soldier. In peace time, he comes believing the service offers something he wants. In his heart he wants to be military, and takes a pride in it. And, just as a foot ball player likes to be one of the best players of a winning team, so he wants to be a good soldier in one of the best organizations, and wants to do his share toward making it so. This book is written for these men, officers and privates; and it has failed of its purpose if it does not bring them such an understanding of the spirit and fundamental principles of the "military game," that their team may well become one of the best in the service.

THE AUTHOR.

JANUARY 10, 1916.

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THE FUNDAMENTALS OF MILITARY SERVICE

CHAPTER I

OUR MILITARY POLICY

THE Military Policy of the United States has been best expressed in its monetary motto, "**In God We Trust.**" And this with but scant recognition of its vital corollary, that *faith without works availeth not.*

As a nation we have sedulously avoided everything military. We have not even taken heed to the matter of educating our own youth, nor our millions of citizens coming from other governments, to any true appreciation of our nationalism, our aspirations, our true traditions and actual history.

Fed on the vaporings of July oratory, and the uncensored fables of school histories, from youth up we have learned only of the mighty prowess of our arms; of the invincible volunteer, who by millions springs to arms in defense of his country. It were a healthful thing for the nation, to empty our minds of this foolishness, to face honestly the facts of history, and like grown men and honest citizens take heed from their lessons for the future welfare of our country.

In no measure detracting from the lustre of those patriotic leaders of the Revolution, whose wonderful patience and self sacrifice held together a few constantly shifting thousands of so-called soldiers, until by the aid of Jehovah, France, and the favorable sentiment in England herself, they won our independence—but rather adding to the lustre of their accomplishment in the face of such discouragements, let us realize the truth:

That instead of our patriot fathers flocking to the standard, it was only with the greatest pains that Washington's pathetically small army was kept recruited at all.

That desertions were wholesale, and discipline often practically nil.

That bounties, greater and greater, had to be paid to get men to enlist.

That short term enlistments kept the personnel constantly changing, and the ranks made up of untrained soldiers; and not infrequently resulted on the very eve of battle in the disintegration of large parts of the army through expiration of their terms of enlistment.

That the revolutionary armies were in consequence mostly inefficient, and often incapable of sustained aggressive campaign, just when the opportunities therefor offered themselves.

That while nearly 400,000 enlisted men passed through the ranks, Washington never had at one time 30,000 effectives.

And that in the end, the decisive victory of Yorktown was made possible only by the timely presence of the French fleet.

While these conditions could be excused in the Revolution, due to the jealousies of the colonies, and the lack of a strong central government—not so in the War of 1812. We were then a nation, going to war on our own motion. But our conduct of that war was even more unintelligent, was in fact pathetic, with no victories during the war to remove the sting of repeated disasters. With the same system of asking the various States to raise and officer the armies, with some responding and some refusing to respond, and with our splendid leaders of the Revolution replaced by political generals, our civilian planned campaigns cut but a sorry figure.

We brought to the colors for that war the astounding number of over 527,000 men—to oppose an English force of less than 17,000—and were beaten and humiliated at every turn. Lack of organization, of discipline, and of trained leadership, made our armies pathetic objects, and ended in allowing a small raiding force of British to penetrate to Washington and raze our Capitol—"while the fleeing President and his cabinet looked back from the hills of Maryland and Virginia upon the ruin their incompetence had wrought." What a picture of national humiliation! What a lesson for the future!

When we realize that England sent 450,000 men into South Africa, rather than yield in the Boer insurrection, were it not more seemly that we accept with some humility the fortunate issue of these two wars, when England was in the death grapple with France, rather than boastfully recall them as evidences of our prowess?

In the Mexican War, success attended our arms, against an inferior foe. There were two conditions strongly in our favor: the commanding officers were trained soldiers, and the scene of conflict was so far removed that the weaknesses of our volunteer system could not operate. By the time the battlefield could be reached, long continued training had put something of discipline into the armies; while to desert back home was physically out of the question.

And finally there stands our great Civil War, the glaring example of the inefficiency of our system, and of its extravagant waste of life and money. When a small trained force in the hands of the nation could have suppressed this rebellion, by continuously underestimating the amount of force necessary to put it down, it was allowed to grow, until millions were involved.

The same civilian control of military matters quite beyond their comprehension, the same short term enlistments, the national government again in the position of a supplicant to its citizens, begging them to enlist, offering them bounties as an inducement, *and in the end having to resort to conscription* in order to get them; the same State control of raising and officering regiments; desertions by the thousands and hundreds of thousands, to return to their homes, or to re-enlist and thus get a duplication of the bounty—all the weaknesses of our previous military experiences were here repeated over and over again. While in the end, the sure aftermath of such a system, the nation is paying annually the astounding sum of one hundred and seventy millions in pensions. Fifty years after the close of the war—an annual payment that would build a Panama Canal every three years! This may be American—but it is vastly inefficient, and wickedly wasteful and extravagant.

It is not within the scope of this short chapter actually to give the details of our past system of conducting wars. Enough if I am so fortunate as to sketch a picture so interesting in its suggested facts of history as to lead the thoughtful citizen to take up the serious reading of Upton's Military Policy of the United States, in which these facts are clearly set forth, and the logical conclusions deduced therefrom.*

And this is true—at the conclusion of each of our wars, those in authority have been so deeply impressed by the utter want of scientific management, by the appalling waste of life and money, that in each case commissions have been called to investigate and report. But nothing has ever come of them. New men were perhaps in office, "perpetual peace" again blessed the land for a brief space, the lessons of the past war were easily consigned to the file for future reference, while the attention of Congress was given to the more pressing business of finance.

And thus it has ever been our practice, to proceed cheerfully sailing our good ship of state in peaceful waters—until war is actually upon us—and then to fall to and try to meet it. But not always may we find our opponent an obliging Lord Howe, to give us an undisturbed year for training, and actually to sail away and leave for our use the rifles, cannon and ammunition so necessary for our army. The time will come when at the outbreak of war, vast forces will be rushing upon us with terrible certainty of control and purpose. Our past methods of unskilled civilian direction of military affairs will result then in swift and terrible disaster. Calling for *75,000 men for three months,* to fight a war which was to take two and a half millions of men four years to finish, would be a *gaucherie* too expensive to contemplate. Our military affairs will either have been in the hands of military experts, and thus be well ordered to meet the test, or, if left to the final decision of the emergency, will be in hopeless chaos and confusion, designed to engulf us all in sudden humiliation and defeat.

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* Even more readable, and vastly instructive, is "Empire and Armament," by Professor Jennings C. Wise.

War to-day is conducted by "nations in arms," which means that all their citizens are naturally called upon to bear each his share, and that all are given such training that they may do this efficiently. This is true of practically all nations, of the democracies quite as well as of the monarchies, and would appear to be dependent not so much on the form of government, as on the statesmanship and broad patriotism of the administrators of the government.

This means the mobilization of vast forces, and is a work that may not be performed in a day, nor in a year. A machine so vast and yet so complicated, will take time in the building; and if we are to hope for one that may ever run efficiently, skilled brains and hands had better be employed in its construction.

And in concluding this sketch, I would say that the one lesson to be gleaned from a study of the actual facts of the early history of our country, would be a true appreciation of the present value of the mature judgments of that one grand character, who first made possible our independence as a nation, and then by wise statesmanship assured that nation an honorable existence among the other nations of the world. He brought to the solution of those vital problems a brave, undaunted spirit, a life's devotion of heart and brain and comprehensive vision, which gave him a prescience almost inspired.

His public utterances, charged with paternal solicitude for the future of his country, founded on such profound thought and vast knowledge of the affairs of men and governments, conservative, honest, uncontaminated by any political motive—why are they not the sure guide for earnest men to-day? Why listen to ungrounded eminations, when such thoughts are at our disposals! The pity is we have to talk so much, and listen so interminably. Personally I would rather follow the reasoning of that Man who knew, and stake the safety of my country on his honest conclusions.

> Fourthly. That every man of the proper age, and ability of body, is firmly bound, by the social compact, to perform personally, his proportion of military duty for the defense of the state.
>
> Fifthly. That all men, of the legal military age, should be armed, enrolled and held responsible for different degrees of military service.
>
> —*Washington's letter of transmittal with Secretary Knox plan.*

CHAPTER II

PSYCHOLOGY OF THE SERVICE

MILITARY SERVICE is our most ancient public institution. In the history of the world no free people have ever existed without it. From the first grouping of men into communities, certain of the ablest members have always been organized as a fighting machine for the protection of their property and civil rights—and these men have been honored in the measure of their prowess. Older than the Church, older than taxation, this honored institution has always demanded of membership in a community, of citizenship in a nation, that the most worthy members should give military service in time of need.

Far from being a characteristic of imperialism, universal military service is the very corner-stone of the edifice of Democracy. Where the liberties of the people are the one aspiration of government, the people must be trained and ready to defend these liberties. Witness Greece and Rome in their glory, and what occasioned their fall; witness Switzerland and France to-day, defending their honor and existence. And that Democracy alone may hope to thrive, whose citizens recognize the obligations of citizenship therein, whose citizens seek not what they may get out of the State, but rather to fit themselves to give individual service to the State. When public opinion comes to measure the success of a man's life by his service to the State and to his fellows, rather than by the fortune he has amassed for selfish aims, then public opinion is worthy to control a great nation, and may hope to hold that nation in the highest place in the councils of the world.

Our nation to-day feels the stirrings of such an opinion, its best citizens are seeking means to give it unselfish individual service. If that spirit grows, particularly in the youth of the nation, there is high promise that, realizing past weaknesses, we may accept a standard of service that will assure for the nation a glorious future.

The first step in considering the military service is to appreciate something of its meanings. You are entering a system as old as history, whose tenets are unchanged by time, whose service to-day requires the same high qualities of manhood, leadership and morale. Its tremendous responsibilities, for the lives of your fellows and the safety of your nation, appeal to a man of red blood; yet give him pause, if he feel himself unfitted to meet them worthily.

The guiding principles of this military machine are *team work* and *subordination.* Its animating soul is *discipline.*

Teamwork.—In battle, and in preparation for battle, there are but rare occasions for " individual plays." Success may be attained only through the most unselfish playing for the team. And not only must the elements of each organization thus work together, but the different arms, infantry, cavalry and artillery, must often sacrifice brilliant opportunities and even meet local defeats, loyally working for the common good of the whole team. Thus each unit, from an army down to a squad, is considered and trained as a team, each under its own team captain. Its elements are taught to work together for the common good, each under its appropriate leader; and these leaders are taught not alone the principles of good leadership, but the spirit and technique of co-operation and loyal teamwork. Thus the brigade commanders train and handle their brigade teams as individual units, yet all work together for the success of the Division team to which they belong. And thus in the last analysis the squad leaders train their men into efficient squad teams, and these squads are the elements which the captain handles in his team, the company. These squads are the *unit teams,* and by successive groupings into larger units they ultimately make the army team with which we face the enemy in battle. They are the prime consideration for the individual soldier. Here he learns the elements of the military game, co-operation, discipline and leadership; and any one member may properly aspire to the leadership, may have it thrust upon him, and therefore should strive to fit himself to meet it worthily.

Subordination.—The individual in each grade of office has his own peculiar responsibilities, and must be held accountable for their strict observance. Subordination rests on a thorough knowledge of what these responsibilities are, on their observance by all, both above and below, and on the proper exercise by each of his own functions. Particularly must the superior take pains to give full play to the powers of his subordinates, always sustaining them if possible in the proper exercise of the function of their grade; thus emphasizing their authority over their men and encouraging initiative and willingness to take responsibility, so necessary to success in campaign and battle. They should not be corrected or criticized in the presence of the men unless absolutely necessary, lest their authority be weakened. If a subordinate has used mistaken judgment, correct him in private, and let him make the correction himself before his men. Hold the sergeant, not the individual private, responsible for failure in performance of duty, in care of equipment, etc. This will make the soldier appreciate the authority of his squad leader, and the leader appreciate his own responsibilities. All this will require patience and resource. But remember that you are training team captains, whose efficiency will be of inestimable service to you later, when work is to be done.

Discipline.—The most important element in military training! As vital to the success of an army, as live steam to the operation of a locomotive. Without it the best of individual soldiers are but an armed mob, to be made a mockery by a trained foe; with a high type of discipline an army's powers are increased tenfold. Every great general in history has recognized this, and his success has been measured by his ability to inspire discipline.

Discipline represents seventy-five per cent of battle efficiency. Men and arms we may command, but money cannot buy discipline, nor munition plants supply it. It is of the very essence of training, and springs from the intelligence and conscientious work of the leaders who must inspire it, or whose incompetence will render its attainment impossible. This is what makes long thorough training so necessary, what makes military men shudder at the thought of war without adequate preparation. Our history is full of instances where otherwise splendid forces have been brutally defeated for lack of discipline. Intangible and psychic, the outgrowth of patient, skillful culture—it is no concrete thing to be handed to troops as they mobilize for war. It is as difficult to attain as it is necessary for success. Only adequate training may supply it, yet it may be lost in a day through the incompetency of leaders. Hence it is the one vital thing for you to understand—to which this chapter is largely given.

Discard any vague conceptions of discipline as associated only with punishments and brutality. We mean something far higher than that. General Sherman says: "Discipline is the *soul* of armies." This means it is the spirit—the actuating spirit that inspires individuals to deeds of heroism, that gives them heart for patient endurance of untold hardships, that makes them freely surrender individual wills to the will of the leader, that binds them into a splendid fellowship, aspiring, sacrificing, training together for a common cause. That is the discipline that you must foster in your organization, To learn how to arouse it is the first duty of the leader.

Discipline may be defined as that psychic something which is always recognized by its manifestations of ever present respect for superiors, and instant cheerful obedience, not only to orders given, but to a high personal sense of duty. It leads directly to *esprit,* from which spring *morale;* and, other things being equal, with the morale fifty men can beat two hundred. How clear then is the course for the successful leader—inflexible in discipline, arousing and fostering in his command pride and *esprit,* till finally they have acquired a morale that makes his men believe themselves invincible. Discipline is then not the end, but a means to an end—the end that each man shall be imbued with a spirit of loyalty to leader and to organization, which will result in *unity and promptness of action in instant response to the will of the leader.*

Military Training.—The one end sought is so to have organized, trained, and disciplined the thousands of individuals who compose an army, that they may be made all to respond as one unit instantly and effectively to the will of the chief. This is the military machine working perfectly. Easily possible on the drill field, every one at ease, well fed and complacent; it can be done amid the strain and roar of the battlefield, only when training has made true leaders of every corporal and general, and developed an unshakable discipline in all.

The Squad System is the foundation for this training. In each branch of the service it may be accepted as fundamental that the smooth working management of the company and its efficiency are dependent upon, first, the grouping of the men into permanent squads under noncommissioned officers assigned as leaders, who are trained as such, and are held responsible for the discipline and proper performance of all the duties of their men in the field or in quarters; and second, on the faithfulness and intelligence with which the commander uses these squad leaders in all administration, each group as a team, its leader as a team captain.

The Infantry Regulations particularly recognize the psychological necessity for developing in peace training the qualities of leadership in the noncommissioned officers; and that the constant use of the squad system in administration and drill is the best available method of accomplishing it. The exigencies of campaign and battle will continually place noncommissioned officers in unexpected command, and if their peace training is to be reasonable, it must prepare them to meet these responsibilities. The commanding officer who is conscientiously training his command for efficiency will take every means of developing his subordinates into good troop leaders.

For administrative purposes in camp or quarters the grouping into squads may be determined at will by physical conditions, but it must always be such that when the organization is formed for tactical purposes, these groups will unite into the permanent squads required by the drill manual of the arm.

Here then in your own company is provided the machinery for the peace training of your noncommissioned officers in troop leadership. Make them in reality team captains of their own squads, use them as such in all matters of administration about the quarters and particularly in the field, train them to the responsibilities of leadership, and train yourself to such system in all your work as will enable you to use squad leaders in everything you do; and change the personnel of your squads as little as possible. This organization is the backbone of efficiency.

To install it is going to tax your patience and ingenuity, but it is really essential that you do it, and thus develop your subordinates into efficient leaders; and soon you will get your reward in commanding an organization which will be a pride and comfort to you; which will work smoothly, all but automatically, the burden quite off your shoulders. Then if war comes, and you have to train quickly some fifty or sixty raw recruits, you will have established a system to make it possible, and a corps of assistants to make it easy.

Leadership.—What then is your first consideration, if you wish to succeed in the military service? *To fit yourself to be team captain of your group.* To be a good team captain requires first that you be a good disciplinarian, next that you acquire and use those qualities that characterize natural leaders of men. In all dealings with your men you must have their respect, unhesitating obedience, and, if you are man enough to win it, their enthusiastic loyalty.

To develop these qualities of leadership discussed below should appeal particularly to the citizen soldier, as they will be of equal value to him in his civil pursuits.

1. To attain the confidence and respect of your men, the first requisite is *superior knowledge.* That will give you the self-confidence to appear as a leader, and will justify your men in following you. Therefore never appear before them unprepared to play your part in the game. You are a sorry object pretending to lead when there are men in ranks who know your part better than you do.

There are many circumstances in which a leader may advise with his subordinates, but it must be clear in the end that the judgment is his own. It is possible, too, for the best men to make mistakes—these should always be frankly acknowledged as such, and no attempt made to bluff them through. Apologies and explanations why are but harmful. The men appreciate manliness; you cannot fool them long, and found out as a bluffer, your leadership is hopeless.

2. It is proper that you should aspire to popularity, to be beloved of your men, to be one of those leaders of whom it is boasted that their men would follow them anywhere. And remember that while history speaks of such leaders generally in the higher grades, their success was made possible only by the fact that their armies were made up of many small groups, in which the men were following their leaders with equal loyalty.

But do not be deluded into thinking that this popularity is attained by easy going methods, by favoritism, by winking at delinquencies and overlooking failures in strict performance of duty. Such popularity fades when the real test comes, and changes to disrespect, insubordination and contempt, when real men are at the fore, leading through hardships and dangers. Build then your popularity on the firmer qualities of justice and fairness to all, inflexibility in demanding obedience and faithful performance of duty, and constant vigilance for the welfare and interests of your men, and above all, by forethought and preparation, on such conduct of your office as will inspire respect and even admiration for your ability as a leader.

The popular noncommissioned officer is the one whose squad is the most snappy and efficient. His men admire him and they have the habit of jumping when he speaks. He does not waste their time through lack of forethought, nor make them do unnecessary work through lack of head work. His brain is active, and in each case alert to such management as is easiest for his men. He does not uselessly march them around three sides of a square when a direct movement would have accomplished the purpose. He demands strict compliance with his orders, and close attention from all whenever he is giving general instructions; and sees that all work, hardship, or privilege is fairly apportioned among them.

3. It is psychologically true that every group of men, working together for any purpose, soon comes to have a soul of its own. It is true of a troop, it is true of a squad. The good leader learns to know that soul, and deal intelligently with it—knows its aspirations, its limits of endurance, how to inspire it to increased endeavor, how to inspirit it when discouraged in fatigue or hardship, how to arouse its interest in the work at hand. Let him always consider this in planning the work for his men, in controlling them in their work. There are many means of appeal to this spirit; you must learn and use them. You can make lagging footsteps quicken and fatigue-dulled minds brighten, just as martial music will make a jaded column spring to life; the men are no less tired, but new nerve-forces have supervened and made them forget the fatigue. This soul is as susceptible to bad influences as to good. How disastrous if the leader offend it. How important that he be in touch with it, and treat it intelligently.

4. It is spirit that makes the soldier endure and dare. Especially among volunteers spirit will carry through where cold-blooded training alone must fail. Watch the good troop leader; on the march, in camp, at drill, in the school room, by word and even more by thoughtful conduct of the work in hand, he is always fostering spirit. His men know that what he requires is reasonable, they feel that he is regarding their welfare in every move, making their work as interesting as possible, and conducive to future success. It is even possible to attain such a group spirit that the failure or delinquency of one man will so hurt the feelings of the group that his punishment may rest on that alone.

5. Every man delights in work well done, in actually doing well what he puts his hand to. Remember this when you direct the drill or work of your men. They enjoy being snappy, being efficient, doing the right thing at the right time, avoiding wasted time or energy—and they are disgusted with the reverse of these. Appreciation of this principle will cause a helpful chagrin when you see failure result from your own inability or inefficient leadership. You are applying it when you commend some man for particularly good performance, when you call out "Good," as the men execute a movement properly at drill.

6. The state of discipline, a mental status, is attained more by a system of rewards than of punishments—yet both are necessary and potent factors. And do not imagine that there is a class to be controlled by punishments alone. For in voluntary service there is no class of men in which you may not appeal successfully to the men's better qualities. If such individuals arrive, the spirit of the group should force them into such uncomfortable isolation that they will either strive to emulate the good or else soon withdraw.

In the system of rewards the leader finds the most powerful ally in building up that discipline which leads to *esprit* and morale. He must be on the lookout for opportunities to use it. A word or even a look of approbation is often sufficient. In every group will be found natural leaders, men who, when hardships bear down the spirits of the majority, are found doing more than their share, and not only by example, but often by cheerful word or quip, are unconsciously inspiriting the whole to better endurance. The leader must find every opportunity to show public recognition of the merit of these men, thus strengthening their influence with their fellows. Give them the important missions; be sure it is such a one who is detailed to any conspicuous or daring duty; if favor must be shown, be sure it goes to such a man. Again, there are always found would-be leaders of the opposite temperament, chronic pessimists and kickers, who by example and frequently by grumblings, lower the average of endurance and performance. It is equally important that the leader undermine the influence of these men, quietly giving them the disagreeable details that often must be performed, and never making the vital mistake of appearing to approve by selecting such a man for a conspicuous detail. How absolutely important then that a leader truly know the personalities of his men. Not only must he pick the man best qualified for the task at hand, but he must consider the effect of his selection on the morale of his group. And this demands constant observation of his men at their work. What supreme confidence in divine guidance must inspire that captain, who, at the end of a hard hot march, has the first detail pitch his tent, roll the walls, arrange the cot and fly net, and then passes quietly to repose, while the soldiers perform their arduous duties unobserved. If this captain were required to detail an orderly to the colonel the next day, he might easily pick some man who through indifference or meanness, had been a humiliation to his squad the day before.

Commanders are better paid and better mounted that they may endure more than those under them; greater and greater grow the demands for tireless vigilance as the grade of the officer increases. In this truth lies one of the main reasons why as war continues we find the younger and more virile men attaining the superior commands. An ambitious troop leader will avoid dissipation, conserving his energies in peace that he may draw on them unsparingly in war, and that he may not need then to rest when by vigilance he might be guarding the welfare of his men and building up their morale for the supreme test to come.

7. Punishments cannot be administered in accordance with any set standard. Every offense contains the elements of the personal equation of the offender, the attending circumstances, the motive, and always the effect on the discipline of the group. Your decision must be the voice of calm impartial justice. A troop leader is ever a judge, guarding the tone of his group as a good judge guards the tone of his civil community.

The authority in you to reward and punish the acts of individual men is a great power for good or for evil—not alone to the individual, but through your treatment of his case to the whole group. It is in your power to ruin a man's career, if you will, as it is to take a weakling and, by proper treatment, make a man and soldier of him. A sense of this should give the leader pause when he is about to emit some hasty judgment formed in passion—the very passion often the result of an inner consciousness of his own failure or weakness. Cultivate, then, patience and justice, a knowledge of human nature and of "cause and effect." It is of the greatest value too to be able to see from the soldier's view-point, as well as from your own. Could that always be done it would be the controlling factor in most correct decisions.

8. Since both punishments and rewards are given for their effect on the discipline and morale of the whole group, they should always follow the act as closely as possible, thus giving full effect. Where the reward is a word of commendation, or the punishment one of reprimand, this may always be done. In any case the first steps toward punishment, where punishment is necessary,

should be promptly taken to avoid discussions and argument among the men and the growth among them of the feeling that perhaps the "old man hasn't the nerve" to back up his authority.

9. Be calm in emergency; unruffled, even sardonic if you have it in you, in the face of hardships; unperturbed and even casual in the face of danger. The psychological power of mental suggestion is now well understood, and accepted as one of the surest means of controlling men. If you are a real leader your men will take their mental attitude from what yours appears to be. In danger they will watch your movements, even facial expression, for reassurance. It is then that you drop some casual remark, "borrow the makings" and roll a cigarette, do any simple thing naturally, showing that you are at ease and confident in these abnormal circumstances, and your men regain their wavering confidence, feeling that you are not afraid. So, in time of unavoidable hardship, you must avoid showing annoyance or impatience. Your sardonic acceptance of necessary conditions will unconsciously lead to theirs, and save the nerve strain and damage to *esprit* which result from grumbling, and bucking, and cursing out everything in general. And in emergency you must show perfect self-control. Remember that your conduct will determine that of your men. If you are excited, they will be more so. The emergency will call for perhaps the most accurate, determined, self-controlled work, and if your heart has jumped into your throat and made your voice quaver and your ideas confused (and this will happen to the best of men), nothing but disaster can result if you communicate this to your men. You will gain time and success in the end, if you take time now to swallow your heart, and regain perfect self-control, before you say one word to betray your perturbation. Then with calm self-assured demeanor give your directions as becomes a real leader. Directions so given are a great comfort to the men, and assure steady intelligent execution. We are now considering one of the most

characteristic failures in inexperienced troop leadership. Try to train yourself so that you will be one of the exceptions, by acquiring the habit in any given situation, of being first sure of yourself, and then calmly giving directions to your men.

10. It is the genius of war to seize the fleeting opportunity. Train yourself to quick decisions, carried out with calm self-confidence. In the hesitation which surprise causes lies its great advantage. Hence the danger of ambuscade, etc. The enemy gets the jump while you are trying to decide what to do. It is not so important what you do, as that you do something and do it quickly. Make a quick decision and then calmly carry it out. Do not change to another plan that may look better an instant later. Vacillation destroys all confidence in a leader. Take a simple plan, a bold one, and then unquestioningly bend every energy to its accomplishment. You may train yourself for this in peace time. How often in civil life you are present at some accident or emergency. There is generally someone in the crowd whose mind has acted instantaneously, who has jumped in and done the right thing. Question your mental processes, why weren't you the man? In the many small affairs of daily life, experiment with making quick decisions, till you get the habit of deciding quickly, and acquire confidence in your ability to do so correctly. This will be of the greatest value to you, to your men, and to your superiors—and if opportunity comes you may grasp it to your great honor and that of your cause.

11. "Soldiers are like children." There is one relation to the leader in which this is true. He is a father to them. On the battlefield at Santiago I saw a young second lieutenant put his hand on the shoulder of a grey-haired old soldier and call him his boy, and there was confidence in the face of the old man as he started alone on his mission. This feeling of mutual sympathy and confidence will spring from thoughtful leadership, and you should aspire to it, and make yourself worthy of it.

12. History records many daring deeds where an intrepid leader has led his men to victory against seemingly overwhelming odds, and all credit is given to his courage. A mistake. There may be hundreds who would have dared lead the charge, but their men were not prepared. Credit must be given not alone to courage, but even more to the intelligent leadership that had brought the men to this opportunity prepared to meet it successfully; confident in the ability of their leader, disciplined and buoyed up by *esprit,* in the best possible condition of mind and body through their leader's constant exercise of vigilance for their daily welfare on the march and in the camp. The making of the heroic leader who will win laurels on the battlefield begins surely in the drill hall at home, and follows throughout the conduct of each day's work in camp and on campaign. He must be not only a disciplinarian and a psychologist, but something of a doctor, a cook, a tailor, saddler and cobbler, a veterinarian and a blacksmith. He will follow up his men like children, and see that they are properly clothed, fed, rested, entertained, kept in health and spirits, giving freely of his vitality that he may reasonably demand tremendous exertion from them when the opportunity offers.

13. Every war has had its famous brigades, famous regiments and famous batteries. They had made a reputation for success and easily maintained it. Their appearance on the battlefield was heralded with acclaim by other organizations. Their personnel was easily kept up because good men were anxious to join them. This may be equally true in training organizations in peace time. Let them get a reputation for excellence and they are more excellent, and their personnel is easily maintained from the best men. This is one of the surest means of attaining troop spirit—to excell in something, it may be in shooting, in horsemanship, in close order drill, or in having the best mess. The men begin to take pride in their organization, in their leaders, and good men begin to seek admission to its membership. This may be as true of a squad as of

a company, and should be the proper object of attainment for the squad leader. Men take delight in doing those things in which they are displaying skill and efficiency. With the bodily and mental training that comes from doing things well, come self-respect, laudable pride, and an assurance that strengthen the individual character and weld the whole organization into a potent force for accomplishment.

14. A good leader is as one with his men, he speaks their language, he shares their blessings and their hardships, he is jealous of their name, he defends their sensibilities and their rights in the larger organization, in fact he is the recognized guardian of their welfare, physical and mental, as individuals and as a group. He becomes their hero and is affectionately nicknamed. Making camp after a hard march, he will not accept an invitation to lunch while his men go hungry awaiting a delayed wagon; he would not take shelter while his men lay out in a storm. He would be the first to question the fairness of the action of an outsider that seemed to work injustice to his group, or to one of them. If supplies are short, he goes and learns why, and remedies it if possible. He sends an ailing man to the doctor and follows up the case with interest, as would a foot-ball captain follow up the treatment of a member of his team during the season. In short, he does everything at all times to make them feel that he is looking out for their interests, not his own selfish comfort. It is incidently true that when hardships come he will be more than repaid by their devotion to him and care for his comfort.

As a thorough example of a great cavalry leader's appreciation of the value of considering the human element in dealing with soldiers, and as an interesting illustration for you of the seeming trifles to which a successful leader gives his personal attention, the following is quoted from General de Brack's instructions to his officers:

"The Pipe.—Every trooper should be encouraged to smoke a pipe. Why? Because it will keep him awake.

The pipe is a means of diversion which, far from interfering with the trooper's performing his duty, attaches him to it and renders it less burdensome. It soothes him, kills time, banishes unpleasant thoughts, and keeps the trooper in bivouac and near his horse. While the trooper, seated upon a pile of hay or grass, smokes his pipe, no one will venture to steal the forage from his horse to give it to another; he is certain that his horse is eating his food, and that he is not getting kicked; the provisions are not stolen from his wallet; he has time to discover the repairs which should be made to his saddlery, clothing, etc.

"On outpost, all sleep is forbidden. What a comfort you will then find the pipe, which drives away drowsiness, speeds the weary hours, renders the rain less chilly, and makes hunger and thirst more easy to endure. If you have to make long night marches after the fatigues of the day, when sleep overpowering you is a veritable torture, and cause of numerous injuries to the horse, nothing will keep you awake like smoking your pipe.

"In a campaign, where men's resources are so limited, there is nothing so trifling as to be devoid of value. The pipe is a medium of exchange, of pleasure, and of duty in the fraternal associations of our military life; in certain cases, when loaned, it becomes a veritable means of relieving distress.

"Therefore, whatever Aristotle and his learned cabal may say, smoke, and make your troopers smoke."

15. Do not delude yourself that you are all right because the men recognize your constituted authority in peace time training and good naturedly obey your commands. The corporal's plaintive "*Follow me,*" heard so often on the drill field, will be lost in battle. Those inspiring words must then boom out in no uncertain tone, and carry conviction. When the stress comes, the best men will be at the fore, and unless you have trained yourself and are of the best, you will find, to your own great humiliation, the men looking to some other man for leadership.

How much better that this other, who had the real stuff, should have had charge of the training. I have seen a sergeant, when the test came, actually fade into the ranks; while a private, who had it in him, naturally took the leadership of the squad through the emergency. It is not to quit when this is true, but to get down to bed rock and train yourself to lead. Acquire superior knowledge, and the power to command. You can do it if you care enough. Next to a coward, the most dangerous man to attempt leadership is one who is ignorant or lazy, or both. If you are not prepared to learn to lead, retire and let another have the chance. If you will stop to realize what your failure on the battlefield might mean of disaster and even disgrace, and not alone to your organization but perhaps through it to the whole cause—you will decide now either to take yourself seriously in hand to learn the game, or else to move down and let another try.

16. How important is your ability to give orders properly. I have had to reduce many noncommissioned officers because they were reporting this man and that for disobedience of orders. They were unfitted to give orders. Disobedience is almost always the fault primarily, either of the order or of the way in which it is given. It is a safe rule that your men originally intend to do right. Assume that first. Then be sure that your order is right and that it is something that should be done. It is demoralizing to discipline to give an order, and then have to change it. And above all be sure there is no suspicion of a question in your own breast but that the order will be obeyed. So often a man has disobeyed because you have shown by voice or manner that you were not sure he would obey. You were not sure of yourself or of your authority. You simply invited disobedience.

There are circumstances in which it is often possible, and even advisable, to add the reason for an order given, thus enlisting the man's intelligent interest in its execution. But in doing this, great care must be taken to avoid any appearance of apologizing for giving the order, and to avoid the possibility of creating a habit that might lead the soldier to stop and ask why on the battlefield.

Give your orders in a quiet, decent tone—just as a base ball captain would tell a player to cover second base. There is no question of insult, nor of disobedience, nor of argument. Your tone has not made his manhood rebel, tempting him to tell you to go to the devil. He is a member of the team, helping toward ultimate success by obeying you as a leader. That is the attitude for both you and him.

But too often there are those placed in authority who so far miss the true situation as to treat their subordinates somewhat as though they were dogs. By word, tone or manner, they wantonly insult their manliness and thus sacrifice loyalty and cheerful subordination. Let them remember that military courtesy goes as much from the superior to the inferior as from the inferior to the superior. You want to command a team of men, not of dogs. And you will never get discipline from men by outraging their manliness.

To bring this home—I have actually been in camp with two different troops of militia cavalry in which the non-commissioned officers were constantly heard cursing the men, shouting profanity and vulgarity in a vain effort to exercise authority. A pathetic spectacle. They could not command the respect of the meanest man in the organization. Open disregard of their orders was a common occurrence, and to be expected. And what of the troop commander who allowed any human being to curse one of his men without himself jumping in and resenting it! The whole situation showed an absolute lack of appreciation of the true spirit of discipline and leadership. These men meant right, but had somewhere picked up that silly tradition of the brutality of army discipline, and were floundering along, outraging every sense of decency and loyalty, hopeless of ever attaining organized efficiency. In each troop there is just one individual who may do any cursing—the "Old Man." He will do it for all; and if he wants it to be "his troop," he will not only exercise this prerogative judiciously, but will be extremely jealous that none other ever infringe upon this privilege ever so silghtly.

He who can make his men jump with a low firm tone of voice has an enviable force of character. The man who has to raise his voice, scream and roar and curse in order to get action is pathetic. He will be an even sorrier figure when trying to lead in an emergency. He has probably missed the first essential, self-control, and is too likely conscious of his own inherent weakness or inability.

Avoid giving too many orders, or indefinite half-hearted orders. Your order must be so expressed as to leave no question whatever as to your intentions. And above all take time and care to see that every order you give is carried out to the letter. It is so easy, especially in the beginning of your career as a leader, for you to overlook the slight deviations and omissions. The men may be trying you out. If you overlook slight omissions they will grow until some man is found in a serious disobedience of orders. And it will be all your fault. If you wish to go slowly at first in enforcing your orders inflexibly, go slowly in giving them, not in demanding execution. Wilful disobedience of orders is one of the gravest military offenses, a violation of the man's oath at enlistment, a slur on the ability of the troop leadership, and a blot on the *esprit* of the organization. Do not let it be true that you led to this through your shiftless squad leadership, whether due to your laziness, ignorance or moral weakness.

17. It may happen, though rarely, that a combination of circumstances has goaded a man into positive insubordination on some certain point. Considered psychologically he has concentrated his faculties to oppose some order—forcing them from the normal easier channels of obedience, he is holding them directed solely on breaking out this new channel of disobedience. It will be exactly wrong to oppose him directly on this one point, for that will assist in keeping his faculties concentrated in opposition, and will

but increase the evil. If such a case must be dealt with at once, you will do well first to divert his faculties by quietly requiring of him some simple thing, like adjusting his uniform, or correcting his position, in which he will obey through force of habit. And thus through easy stages you may regain control and save the situation. This is illustrated by a principle in horse training. Often where you persist in attempting some one movement the horse becomes stubborn and refuses to move at all. It then becomes necessary to change absolutely to some simple thing, that you are sure he will do at your command—perhaps to walk, halt, and walk again. Thus you re-establish control, and then through steps that he will perform, return to the first test of obedience.

If in any particular case the above methods have failed, there still remain the sterner methods of the regular service. Your authority must be respected. It is backed by the entire military force of the nation.

18. "Actions speak louder than words." A military leader does not preach. There will be rare times when you will have to tell your men in detail what you want. Generally it will be by brief expressions, by holding to a standard of performance, by your own invariable conduct and your example, that you will attain the desired results. You do not keep your men "on their toes" by telling them that you want them there, but rather by making the work so interesting, by putting so much snap and vitality and intelligent direction into it yourself, you bring them and hold them there unconsciously. Then after the drill is over they do the talking about how snappy it was, and you get the credit.

Whenever you do address remarks to a group of men, first see to it that all of them are giving you attention. It is ridiculous for you to be talking to them, and they wandering about, interested in their own affairs or conversation. Always call them to attention first, and see that they have all obeyed it; then you may talk, and may properly hold them responsible for having heard what you said. They may be "at ease," but they must be attentive. If the men be in ranks at attention, direct them "look to me," as eyes to the front is part of their military position, and generally you want their eyes on you if your remarks are of any moment.

19. The leader is held responsible for the appearance, conduct, and performance of duty of his men. He accomplishes this first by being an example; in neatness of dress, care of arms and equipment, punctuality at formations, cheerfulness in performance of all duties, unvarying observance of regulations, military courtesy, etc. And then he must follow up the delinquents, to see that they also conform. If wise he will do this by arousing the men's interest in keeping up—in any case he must so do it as to avoid nagging. In insisting upon an exact observance of regulations in all small matters, dress, police, stable duty, etc., he is requiring his men to form habits of obedience that will make discipline easy and be of great value later in the service. Why not explain this to the men? It will add to their interest in all their work.

20. You expect loyalty, so show it yourself to your superiors. If you receive an order for your command to perform a disagreeable duty, go to its execution loyally; do not try to purchase cheap popularity with your men by saying that "so and so has ordered this and we've got to do it." This is too cheap, and your men will know that you are not playing your part in the team work. Nor may you even listen quietly while your men curse the order. Remember that your team is part of the next higher organization and that you are working to make that the best in the service, to make your men proud to belong to it and proud of its leader. Seek to learn the spirit of an order, then execute it loyally. That is the example you want to give, and the service you owe your superiors. Do not be so petty as to spend time criticizing the form or wording of an order, or so unmindful of your part as a soldier.

21. It seems as though every organization has to have at least one noncommissioned officer that is always "agin the government." His mentality and force have made him a leader, but he has the curse of pessimism, and his lifting force in any proposition toward progress has generally a negative sign before it. If you are this unhappy individual, lay violent hands on your temperament, and the next time enthusiasm begins to stir a conference, curb your impulse to kick, and see how it feels to get behind and push. One of the essential qualities of a good soldier is cheerfulness. That squad is indeed unfortunate which does not count among its members at least one indomitable soul (generally Irish) to jolly it through the endurance of hardships. This quality may be cultivated in the "squad spirit," and should be. Some swinging song, peculiar to your outfit, will bring it happily into camp, when others are barely dragging along the dusty road. In any event, growling at hardships is only demoralizing to *esprit,* and weakening to the powers of endurance. It must not be tolerated. Ability to endure hardship must characterize a successful army, and it is claimed that modern Americans lack it.

22. In performing work assigned your command you must not actually work with your hands, any more than an officer would enter the firing line with a rifle in battle, not because it is beneath your dignity, but because you are in charge and must give your attention to control and direction, and to the observation of your men in the work. How often we see an inexperienced noncommissioned officer in the ditch with the shovel, while a wise private smokes at ease on the bank. There is no one thing more conductive to dissatisfaction than for the leader to allow certain smooth "dead-beats" continually to put it over on the others who must do their share of the work. No, you had better be in observation, and using your faculties to see that the "smooth ones" get their full share. This will add to *esprit.* Where the task is unfamiliar or difficult, conditions might easily arise in which you would do

best to jump in and set the pace for a minute. But you are not to put yourself in as an equal in sharing the work. How easy always to call upon the willing ones for the task. Smith is full of good spirits, a willing worker. So a careless squad leader, or one lacking confidence in his own authority over his men, will always send Smith to do this and that. Instead of always putting the work on the cheerful ones, on the capable ones, thus putting a premium on worthlessness and sullenness, a good leader will see that the lazy and sullen get their full share of the hard work.

23. If you could only appreciate the value of arousing the men's interest in the work at hand. Imagine a detail of recruits digging their first kitchen incinerator. They may be shovelling dirt to kill time for all they know. But first let the corporal tell them what they are going to make, what an incinerator is and what it is for, and that each troop kitchen has to have one. He may thus arouse their interest in it, and their pride in making theirs the best in camp—and now see them work. So, with each task, the men should know at least what they are about and why it is necessary; and so be allowed to participate with you in the pleasure and credit of doing it well.

24. Most tasks require especial forethought and planning on the part of the leader. You have got to sit down and study it ahead of time, foresee every detail, and plan to meet it with system and the least friction and lost motion for the men. Then only will you be able to conduct the work as a real leader should. Failure in this is far too common. You see regular officers conducting some work, detraining a command, breaking a camp, what you will, everything working smoothly, and seem to think that the officer does this by inspiration. In reality, if he does it smoothly, it is only because he has anticipated each step and planned ahead for it.

Do not assume that in putting on your uniform you have clothed yourself with any peculiar omniscience that will enable you to guess right as the situations arise. The best trained lawyer would not appear in court without specially preparing himself to meet the conditions of the case in hand. It is equally necessary for you to plan ahead your line of action; and those who appear such successful leaders have thus prepared themselves. If a foreman on a job employed his men without intelligent direction, in the shiftless time-killing way most noncommissioned officers go about a piece of work, he would be properly fired by the superintendent. The men themselves would be disgusted with him. When you are detailed to do a piece of work, size up the situation and plan it so that when the men are at it they will work with the highest degree of efficiency. Do not have men standing about idle. Get the work done and let the men go. If you have eight men to do two men's work, divide it into four reliefs, and make each two hum while their shift is on. Anticipate what tools you will need, get everything in hand, allot the work to the men, and then go to it. They will like it any amount better than dragging around for twice the length of time.

25. In the Regular Service certain rules are always observed governing the relations and intercourse of military men. Long experience has proven them most conductive to discipline. They are the growth of centuries of experience, and are much the same in all the armies of the world. They forbid familiarity between the noncommissioned officer and his men, or between officers and enlisted men. They prescribe the military salute, the military forms of address, the position of attention, etc.—all are visible signs of discipline and characterize the organization that has a fine *esprit.*

26. A soldier's career may depend largely on how he is started in the service. The noncommissioned officer must consider this in dealing with recruits. They have no clear conception of what it is all about, you must explain the why of many things, and arouse an intelligent interest in the drill and all forms of work. Recall how stupid and unreasonable much of it seemed to you in your early experience. The recruit soon learns to look to you for

instruction and advice. Keep that relation in use. Later you may have opportunity to advise him about his conduct, and thus keep him out of some trouble into which his own thoughtlessness or shiftlessness or even viciousness might lead him. Men are going to have grievances. Encourage them to come to their corporal freely with their troubles, and let him use his tact in settling these matters for the best good of the troop spirit.

And how important that you seize the recruit and, from the first step, exact the most rigid accuracy and observance of military regulations. He will then commence forming habits of exact obedience. He will be military and glory in it. That is what civilians enlist for. They admire the military; and in their eyes you are a wonder of perfection and precision. How disastrous then if you appear before them uncertain or indifferent. You first disappoint them, and soon deaden or disgust their keen appreciation and ambition. You inculcate habits of indifference rather than of smartness. Think of that, you leaders, and do not disappoint your men by being easy-going, indifferent soldiers. Be military to a degree, and make them the same. They will admire you for it, and your captain bless you.

27. You must have imagination, or acquire it. In peace-time training, the cold prosaic matter-of-fact brain makes a poor leader in a battle exercise. Imagination and spirit must make you see the enemy when there is no enemy, feel his coming through those distant woods, see him break into the open, see his column form for attack as you launch yours, see his platoons maneuver to meet yours, disperse in the clash of the charge and rally to charge again. You must not only be able to see this yourself, but have the power of expression to make your men see and feel it.

And in war, you must have imagination, to enable you to anticipate the moves of the enemy. As you march you will constantly consider the situation from his point of view, foresee how he may use the terrain to meet you coming as you are, and prepare to act quickly to meet him.

Then surprise will not benumb you. In fact you are anticipating him and there is no surprise.

28. Competition and rivalry are good among equals. They are an application of the principle that men take pleasure in excelling, and in having their excellence recognized. You will use this in building up *esprit* in your squads, your platoons, and your troops.

But it is a narrow-minded policy to arouse *esprit* in your arm of the service at the expense of other arms, by invidious comparison or by holding them up to scorn or ridicule. He who does this has missed the vital spirit of team work so essential to the success of the army. He has failed to appreciate the interdependence of the Arms, and how each must have confidence in the other and give it loyal encouragement and support in the time of battle. He is ignorant of the "Brotherhood of Arms," and not only is he thus showing himself unworthy of leadership therein, but he is lending his influence toward weakening that so important bond.

29. The proudest characteristic of the service and that one most jealously guarded, is the nicety of its Honor. The plain statement of an officer, "I do so and so," is as good as his "I certify on honor." Practices that might be accepted in civil life would be intolerable in this knightly brotherhood. An officer is a gentleman, and if he fails of that standard, the law knows but the one sentence of dismissal. Measure yourself by this standard, and your relations with your fellows, and with the men under you, cannot go far wrong.

30. In the regular service, discipline is attained by continuous hammering, twenty-four hours a day, seven days a week. With you opportunities for training are rare, a few hours each week, perhaps a few weeks together in the field once a year. How unreasonable, therefore, to expect to attain the desired result from an application of the same methods in the two services.

In fact the means for developing discipline must always be suited to the peculiar circumstances at hand.

No set rules can be followed. Each case is a study for each leader, largely determined by the human equation, the leader's, as well as his men's. "A knowledge of human nature is half of the art of war." But in general you are dealing with intelligence, patriotism, pride in the organization and love for the service. Use these advantages fully; explain the absolute necessity of discipline, for efficiency and even for self-preservation, appeal to the *esprit* of the organization, and to the individual's pride in being well disciplined, and then help to establish it by constant practice. Remember you are dealing with citizens who want to be good soldiers, with men of intelligence and civil standing perhaps equal to yours, men who welcome efficiency, and will eagerly accept your precepts so long as you are good enough yourself to make it appear that your precepts are good medicine.

Success will depend even then largely upon the degree to which you and your men are willing to train yourselves in self-dicipline during the long periods when out of active training. These bodies of yours are going to rebel strenuously when hardships and hunger bear hard in campaign, they are going to command a halt for rest at the crucial moment when victory lies just beyond the seeming limit of your endurance. Well for you in that time if you have taught the physical man that he must obey the moral. What millions of lives have been lost in war, because the winners of certain battles did not have the stamina to carry the victory on through to a crushing defeat that would have closed the campaign. The seeming brutality that drives exhausted men forward after victory, is in reality as merciful, as it is rare. If you are willing to train to meet this successfully, try self-discipline in the matter of over-indulgence, especially in eating. Leap out of bed each morning, into ten minutes strenuous exercise. Each man may find means enough for self-training; and he will be a better man, and citizen, and soldier, in the degree in which he practices them.

31. Do you ever think what we mean by military car-

riage? Why we insist that when the soldier comes up and addresses an officer he shall stand with head erect, shoulders back and chest expanded, stand squarely on both feet, the proud figure of a man looking his officer squarely in the eye. It is because we want him to feel proud, and show his pride. He is a fellow member in the honorable profession of arms. By his voluntary enlistment he has taken a position before his fellow citizens that entitles him to their respect. He has in effect announced that he is man enough to meet sacrifice and hardship and even death; yes, to meet a thousand deaths on the battlefield, and still go on. That puts him in a class by himself. And these are proud words for any man to feel, "I am a soldier." Get this spirit into you, and you will understand why it hurts to see a man standing about in uniform, indifferent to appearance, unmilitary, unclean, altogether out of place in this assembly of superior men training themselves to be fit soldiers in time of need.

And to be a good soldier means to be a better citizen. We proudly trace the traditions of our service directly back to the Order of Knighthood, which for centuries furnished the brain and spirit and sinew to European armies, and indelibly stamped its impress upon our profession. The governing principles of this order, formed to succor the weak and to maintain the right amidst the horrors of the Dark Ages, were abhorrence of cowardice and deceit, humbleness in victory, stoicism in hardship, patience in defeat, and gentleness in the exercise of strength. It set the high standard of "a gentleman and a soldier," and its civic virtues actually made our present civilization possible.

The true soldier stands for that to-day—and his community is better for his living in it. His duty does not cease when he leaves the quarters. In the presence of crime against the commonwealth, of public danger or disaster, in any crisis, he remembers he is a soldier, and is the first to jump to the front—discipline and training have made him a natural leader, a high sense of public duty makes him a worthy one.

This has been the proud record of the American soldiery—ever at the fore in sustaining the public weal, never found working to undo it. Not alone when ordered in time of riot, but always in time of great civic need or disaster—in the San Francisco earthquake, the Mississippi floods, the tremendous problems in Panama and our tropical islands, the soldier has proudly borne the brunt of regulation and control.

32. Of the value of the elements that go to make up *battle efficiency*—numbers, arms, training, and morale—Napoleon says that 75 per cent is *morale*. And accordingly he took every opportunity to develop the morale of his men. Yet in our service how few officers give this any particular thought, or realize its tremendous importance, and close association with discipline. In reality this should be the first consideration in everything they do; how to do it to get the right psychological effect upon the discipline, the morale, of their men. In directing work, in giving commands or orders, in corrections and commendations, in fact in all the matters of administration and dealing with the men, think what the effect will be, and so do it as to get the desired effect on the spirit of the whole. If you stop to think, it is remarkable in what little matters this becomes important. There is one right way to do each thing, and a dozen wrong ones—and you will use one of the latter unless you train yourself to think of its effect. It is so easy to disgust men by wasting time and energy, by fool explanations and exhibitions at drill, by always being the last to bring around, and in a thousand seeming trifles, all of which point to your being just short of the keen leader who never misses anything for the advantage of his organization. And each of these instances, properly handled, would have added one cubit more to the stature of your just claim to leadership, to the pride of your outfit, and their confidence in being able to accomplish anything.

By morale we mean the instinctive feeling of strength and superiority; that which, at the very outset, gives a feeling of confidence, an assurance of victory through our own unconquerable ability. It springs then from an *honest confidence.* How will you get it? Like discipline, it must be the study for each leader. But fundamentally it must rest on your having done such *thorough work* as will have inspired confidence in the ability of the leaders and in the excellence of your instruction, so you will honestly believe yourselves able to play your part surely when the test comes. This honest belief can come only from doing good work. You cannot talk or sing it into yourselves. It will be found about as valuable as the "collar" on your glass of beer, if it springs from the same source. There should be in your military repertoire at least a few things that you know you can do well, for it is in doing them well that the feeling properly grows that you are good, that your training is good, and that you will be able to carry through no matter what comes.

And later, in time of panic, when disorganization and flight are impending, to be put through one of these well-known movements will help steady you into a machine; while the knowledge that you are capable of such controlled action will have tended subconsciously to hold off the panicky feelings.

33. Because training a football team is psychologically so like that of a military squad, and because in discussing football we are dealing with situations which are well known and therefore perhaps better understood, and because the following remarks of our old coach at West Point to the football squad at the beginning of the season are so full of meat equally applicable to you, I quote them here:

"You must begin my mastering the fundamental plays of the game. Merely to know what they are will not answer the purpose at all; you must be able to execute them completely and accurately, at any time, and under any circumstances. And each one of you must know the part to be done by each of the other members of the team. This is the very foundation of team work, and without team work your efforts will not be successful. It is up to each man to master these rudiments at the start, and he must be honest with himself about it, and be his own severest critic. One man may spoil the work of the whole team by pretending he knows, when he does not.

" Such knowledge and ability are invaluable in both offensive and defensive play; and the team which has acquired them has confidence in its own ability to win on the merits by making each play go.

" The best plays on the offense are often the simplest plays, when they are made by a team which knows it can make them go. A team which cannot make simple plays well, can never do anything worth while with intricate plays. Many a championship game has been lost because the team had no simple play by which it knew it could make a yard. The best defense can hardly keep a team from making distance when it knows how to make a simple formation, and makes the play go with a spirit born of the knowledge that no mistakes will be made, and that the same play has always made ground before. You can get along and do well without intricate plays or brilliant individual effort, but you will fail if you do not know thoroughly the 'A. B. C.' of the game."

The Battlefield.—The psychology of control of men on the battlefield is a big subject, of vital importance to leaders. Enough here to bring to your attention a few salient facts, which you must consider in training.

Man, an individual, is largely controlled by his emotions—they color his judgment in the calmest moments, in excitement he is likely to become their creature. Men in a crowd are swayed by impulses often so unreasonable as to seem absurd and impossible to any one of them standing alone. This is illustrated time and again by the unreasoning, often ridiculous, conduct of mobs.

The strongest instinct in man, handed down from primal times, is self-preservation. When he feels that life is threatened, fear obtruds. If this fear possesses his being, his faculties are paralyzed, his eye distends till vision is obscured, breathing is spasmodic, muscles tremble and physical exhaustion impends; he neither hears nor reasons. At any moment he may blindly abandon all previous standards of conduct, and, forgetful of honor and duty, regard only his safety.

In a command of soldiers on the battlefield, you have a crowd subjected to the strongest emotions, the ideal condition for developing a mob. They are beyond belief sensitive to emotions. Impulses sweep through them as easily as sound waves through ether. If this condition be allowed to grow, the most trivial thing may start a panic that will sweep all before it. This is the battle nightmare of experienced generals, especially in dealing with raw troops. History is full of instances where whole commands have been swept away in panic over the shadow of nothing. Here is the time for cool leadership, for officers who feel the pulse of their men, who know their very souls, and have learned how to steady and control men. Themselves appearing nonchalant, they will be constantly watchful to prevent the strain from reaching the breaking point. They themselves, by suggesting hopeful thoughts as to the conditions of the battle, by one means or another, will be the author of the impulses that sway the men, and thus by the aid of training and discipline, they may bring them through the crisis.

Another not infrequent battle picture is the individual, gone mad. His faculties are benumbed. You have known him as a fine type of man and soldier, and now behold him acting like an idiot. There is no control for him but through the habit of obedience, the result of long, rigid training.

With these true pictures clearly in mind, you may now read understandingly the real history of our past wars; and may fit yourself not to go into battle unprepared to meet similar conditions, surprised to find your easy control of the drillfield gone forever. By giving thought, by observation and self-training, prepare yourself to be controlled and resourceful in emergencies; take advantage of every opportunity that offers even mild excitement, to study the conduct of men, and above all, how it may be controlled. Whenever working with experienced officers, study their manner and expressions for points on control. Think how you would handle each situation, till your mind learns to respond easily to the call of emergency.

Courage and Fear.—You may well accept the cold fact that fear is going to be the predominant emotion upon going into battle. Anticipate this, and do not lend to its power for producing paralysis and demoralization, the potent element of surprise. Accept the fact, and plan to meet it intelligently.

The courage that lets a man freely sacrifice his life for the cause, is a rare thing. Therefore the world resounds with its praises. Little is said, however, of the half million individuals, officers and men, who deserted the Northern armies during the Civil War. Incidentally, they were the fathers of many in the present generation, and their sons would be met in a present call to arms.

But courage can be developed to a degree; and must be. It is the essential moral quality for a soldier. It is possible only with a good physique, good bodily health, and confidence in self, in comrades, and in leaders. This clearly points the way for the training to be given; development of physique, till the man is "hard as iron," proud and confident of his power to endure hardships; practice in the use of arms and in military exercises, till he is at ease and sure of himself in any situation; and all the time, such use of team work as to make him sure of his comrades and his leader.

This will help, but still we must deal with fear. It was Marshall Ney who said, "The one who says he never knew fear is a compound liar." And the great Turenne, who said to himself upon entering a battle, "You tremble, body. Well, you would tremble more if you knew where I am going to take you."

But we are not to let this fear betray us. Rather shall we, reading with honest conviction the lessons of our past weaknesses, self-train ourselves, mentally, morally, and physically, our children in our homes, our youth in our schools, our manhood in the pursuits of life, to a high ideal of patriotism and intelligent devotion to our country, fitting ourselves to give efficient service to the nation.

CHAPTER III

MILITARY TRAINING

DRILL is to be the one big thing in your present service. It is where you all learn "the game," where you may train yourselves in military leadership. In peace time your service will consist in little else; if called to train quickly for war, drill becomes vital, every hour precious, time and energies must be skillfully employed. How important in either event that you learn to make it what it should be, full of interest and practical efficiency. Drill can be made so keen the men will leave it mentally exhilarated, enthusiastic, sure they have made a big stride forward; or it can be, and too often is, made so aimless and stupid, as to leave the men bored, disgusted, and with little hope for the future. It all rests with the instructor. To be a good drill master is an art in itself; and so few have acquired it! The nation can supply men, who is to supply the necessary thousands of leaders and instructors! It is for you *now* to train yourselves for that duty.

The first necessity is a live appreciation of what the drill is for, what you are trying to get out of it. Not knowing, you can expect to get but little that is good. Then, too, you must know the different kinds of drill, each for its own specific purpose, and learn to enter them intelligently: the close order drill of precision, for discipline; the extended order formations, for learning the mechanism of control for campaign and battle; the battle exercises and maneuvers in simulated real conditions, for practising this mechanism; the practical training in the use of the arms and equipment, in signalling, entrenching, individual cooking, etc.; and, in the mounted services, the fast drills of excitement and dash, to arouse the *esprit* of the arm and prepare them for the quick sure control of the battlefield.

It is the **Close Order Drill** that is the most abused.

And some organizations get but little other. Let us see what this drill should accomplish, and how it should be done. First, both you and your men must have a clear idea of the object of the drill. That will make you all interested in it, and in making it good. These precise movements of the manual and close order are not for the purpose of learning how to get about on the battlefield, they will hardly be used there at all; they are for the object of *training your minds and bodies into* HABITS *of precise unhesitating obedience to the will of your leader.* That is the object of this drill—to form *habits* of obedience. Then when the stress of battle comes, and men's faculties are paralyzed by the unwonted roar and loss of life and straining fear, they may still be controlled because HABIT *has made obedience automatic and the easiest line of action.* This psychological truth is fundamental in our military training. It is the guiding principle for all drills of precision, which are but schools in discipline.

The instructor commands "Right front into line," not because he wants you in line especially, but in order to exercise you in an exact performance of that particular movement, to habituate you to move exactly as he has ordered you to. How absurd then, that instead of correcting the failures in executing this, and then repeating it, trying for an exact performance, he should complacently pass on to another movement. And yet we have seen instructors conduct a whole drill on this basis, the men growing more and more tired and bored as it progressed. How preferable that the men first *appreciate the object of and necessity for precision,* that the instructor be able to name the individual faults that have prevented it, and then that all concentrate on executing one movement right before attempting another. Such a drill will be of real value in the training. The men are now interested in making each movement perfect, and this makes it imperative that the instructor criticize each movement, "good," "very good," "poor," and if so, wherein and how to be corrected.

The instructor who does not know, and must perforce conduct an indifferent drill, not only wastes precious time, but is doing actual damage, for he is inculcating habits, not of exact obedience, but of indifferent obedience. He had better give " rest " until " recall." But this is unnecessary, for he may easily prepare himself thoroughly beforehand on a *selected few movements* and interest the squad in perfecting those.

To conduct this drill you have got to know every detail of the movement yourself. In preparing yourself for it, visualize its execution and see what individual is responsible for the correctness of execution of each part, try to see what faults are likely to occur and how to correct them. You can do this for two or three movements —you cannot do it for several. But in a short time you will have done it for all, and will find yourself a capable drill master.

It is inconceivable yet true, that there are officers who presume to conduct a drill, and yet do not even know how the movements they order are to be executed. I have actually seen troops in mounted drill executing " column right " when in column of platoons, each platoon trying to execute the right turn, everybody *at a walk*. The men knew something was wrong; and by first one and then another trotting up a little and the pivot dragging a little, they would finally get into line again. And during all this *not one word* of correction or instruction from captain, chiefs of platoons or file closers. I have seen this more than once and in more than one troop; and tell it here as so forcible an illustration of the utter futility of that kind of drill that you will all get the point.

It is not enough to know the commands and to give them correctly; to make their execution perfect is the real thing. The very essence of drill requires that the instructor shall have analyzed each movement in detail, till he knows exactly what each element should be doing at each instant—then and then only, will he be able to put his finger on the man who went wrong and show him how he spoiled the precision of the movement; and be able also to make such corrections as will result in perfect execution after sufficient trials. Remember this always—*"To Drill Resolves Itself into the Power to Observe and Correct Mistakes, and So to Correct Them as to Make a Lasting Impression."*

Do not think for a minute that you can conduct a drill without special forethought and preparation for each particular drill. The most experienced drill masters will hardly undertake that—you certainly cannot do it. Realize that you have but few drills at your disposal, each is precious. Do not waste one, but be sure that each one does its share toward attaining the desired standard of efficiency. To do this you will have to plan the appropriate work for each drill, and then fit yourself to conduct it smartly.

Realize, too, that your men have put themselves and their time at your disposal for the purpose of being trained as soldiers. They are mostly intelligent men. Do not insult their intelligence by going before them unprepared to occupy their full time with interesting instructive work. This puts it right up to you; and no man can occupy a full drill period properly, without having first fitted himself especially for it.

So often we see the instructor unctuously giving his men "rest" while he scratches his vacant head in an effort to think what to do next. If you could watch the faces of the men in ranks! Consider an instructor who has thought out his work, is quick and sure in correcting the exact individual mistake, keeps his men alert and keen, interested and on the jump. His men are sweating blood, but they are getting what they came for, their eyes are bright, and after the drill they are enthusiastic about their instructor and their outfit, and ready to advise friends to join it. When you realize that in all dealings with your men, and especially in drill, you must regard the moral effect, you can see what such a drill means for *esprit* and morale.

Now watch the men under the instructor who is unprepared. He gives commands, even these are often incorrect. He shows no ability to get accurate performance—seems incapable of it. His corrections, if he makes any, are general and casual, not aimed directly and unerringly at the exact mistake. Drill lags, the men become bored. They are wasting their time and they know it. They leave the drill disgusted; if they advised a man to join the outfit it would be because they had it in for him.

You will see a company at drill, the men of one platoon bright, interested, enjoying the keen quick control they are under; the men of the other platoon tired, bored, disgusted, their platoon never quite right and they humiliated by the fact; they are under command of a "dub," and they know it. This is put strongly because you must feel it strongly. Then you will not go to drill, and be ignorant of your part in it.

And you must make your drills interesting to the men, not necessarily by variety, though that is necessary to avoid exhausting their attention by straining it too long on one subject, but always and all the time by striving for perfection in each of the few movements undertaken, by putting your own vitality into it, and by caring so much that every man be exactly right every instant that you cannot tolerate inaccuracy or inattention, and will nail each one of these on the head the instant it appears, and by being interested yourself and showing your interest in the tone of your commands. This requires *vitality* on your part. You give of your strength and spirit, and put them into the men. It is exhausting work. If you are personally sick, your drill will be sick. Do not presume to take charge then; give your subordinate this chance at command.

You will soon so train your eye that it will catch the man the *instant* he *starts* to go wrong, and by calling his name and telling him what to do quickly, you will often save a bad break. Do not waste time and energy to ask "where the h—l he is going." He might stop and answer you. Tell him where to go. This takes training, and knowing the men by name, and above all such an intimate knowledge on your part of the mechanism of each movement that you can spot the slip the instant it occurs.

It is possible to prolong this drill too far, until close attention becomes impossible. But do not be too easy, too careful of tiring the men. Remember you are trying to train their wills to force their bodies into exact obedience under the most unfavorable conditions. Hence, while the drill lasts, attention must be rigid and performance exactly precise; and it should be continued at this gait until it has tested somewhat their powers of endurance. A good instructor watches this at each drill; the periods will naturally grow longer with practice. They should never be really *long*. The very essence of this drill is *concentrated attention,* and a rapid fire of commands, snappy executions, and terse corrections. Then quit. Do not ruin the effect by dawdling.

That all of the leaders may have the necessary preparation in advance to make such a drill possible, requires a scheme of instruction, and the announcement ahead of time of the *few movements to be taken up at the next drill.* And this is reasonable. Your time is limited; you can attain the prescribed standard of proficiency only by systematic progressive work. It is futile to attempt it hit or miss; or to attempt to cover too much ground at one drill. Remember that only in *thoroughness* can you get the most important results, *Morale.*

You will be astonished to find how interested both you and your men will become in perfecting these few movements; and once perfected they will never bother again. They become an asset for future drills. Again you will be astonished at how soon you have covered all the important movements, and find your company putting up a good drill. The drill book looks endless taken as a whole. But resolve it into its parts, take them in proper turn—system and gradual progress by steps taken thoroughly will bring you to the end of the season with an organization that is efficient, whose men are confident in their ability and in yours.

You have got to be helped in this instruction by both the noncommissioned officers and the men themselves. In the regular service where little else is done the men learn the drill by having it hammered into them daily. You have not time for this, nor the class of men who learn that way. Take advantage of their intelligence and interest, and let them study up the designated subjects before each drill. Let them get the spirit of the thing, feel that they are in part responsible for the success of the organization, and their co-operation will make the drills go. Each private should have in his possession a copy of the Drill Regulations and a copy of this book. In addition each non-commissioned officer should have the Field Service Regulations; and in the office for easy reference by all should be at least one copy of each of the service Manuals, Regulations, Law, etc.

You simply must appreciate the necessity of this system of *self-instruction by the men themselves,* of having them come to the drill knowing the book; so that drill becomes a place only for practice—illustrating, perfecting and co-ordinating the matter in hand, not for standing about listening to a lot of words. So many officers miss this, or believe it impracticable, and continue to spend precious hours designed for drill in giving explanations to men who can read as intelligently as themselves. There is no *training* to be had from standing in ranks listening to explanations, it is ridiculous. I sometimes wonder if the officers who deny their men this privilege of study, fear their learning the book too well.

If our system of short periods of training for citizen soldiers is to be other than a complete failure, it must be only through thus using the intelligence and initiative of the men themselves, to speed up the training. This is modern, and American, and our only possible excuse for not adopting the Continental standard of two years' continuous training. For it is fair to assume that the efficiency expert. Germany, would not spend two years training an infantry private, if their drill system could do it in less time.

Compare your military squad with a football squad. Each is composed of men with nerve and spirit enough to volunteer to fight for the honor of their institution, both have but limited time for training, both must be so trained in individual skill coalesced into team work, so disciplined by drill, so accustomed to sure control under excitement, made so confident of their ability and of that of their captain, that they may go to the field of conflict with a morale that knows only victory, and never knows defeat. Then why not make your training like that of the successful football coach? He bows to no time honored traditions of making automatons of his men, but uses their intelligence. They must come to the field knowing the details of the plays. No time there for explanations. The practice is to *coordinate and perfect these plays*. It is stiff and hard, under positive direction, with crisp individual corrections, and brief pointed instructions. The men delight in it. It makes them sweat, but their blood tingles at the thought of the coming fight, for they are confident that they are good men on a good team under a smashing good captain. The same plays are practised over and over again, and with no loss of interest, for every man is striving for perfection, knows that only by thoroughness and a sure knowledge of the fundamentals can his team get that morale which is going to carry them to victory. It is stated that in the years of [illegible] supremacy, she used to come down to the middle of the season with but six plays and a punt. What a lesson in the value of thoroughness for the military student. You, too, may make your military drill equally smart, every man on his toes to make the execution perfect. [illegible] how much [illegible] drill [illegible] you [illegible].

The noncommissioned officers must be ready to act also as instructors. This will require until the system has resulted in their proficiency, that the officers and noncommissioned officers get together and train themselves thoroughly in the subjects for the next drill before they attempt to take it. For with volunteers it is understood that officers and noncommissioned officers are learning their parts, as well as training the men. In this preliminary drill, each may well take turn in drilling the others as a squad in the movements under discussion. This has two advantages—it assures the one in command of his ability to handle the situation, and both he and those in ranks have an opportunity to discover what difficulties are going to bother the men, so that they may know what points to watch in giving the drill. This system will take additional time for officers, noncommissioned officers, and selected privates, but it is worth it, and will not have to be continued long if done thoroughly. It has been used with great success by militia organizations.

All should realize that a portion of the "object of drill" is for the purpose of training leaders, officers and noncommissioned officers. A corporal cannot learn to command without experience in commanding, nor can a major swing his squadron without practice. The ultimate object of all your training is preparedness for mobilization for war; and these leaders must be trained, especially in their function as instructors, that they may quickly train the recruits who will then be necessary for our armies.

In laying out in advance the season's work for his organization, I should say the captain would have to give it several hours' solid thought. He should size up his situation and see what he can make of it, just as the coach of a college football team would do. Both are anxious to come to the end of the season with the best perfected organization possible. Both have certain old men to work with, both have a limited amount of time for training, both have new material to get into shape, and certain possibilities as to recruits. As the coach maps out the work so as to employ the old men and available time to the best advantage, so you should take the roster, study its personnel as to fitness and necessary training, decide what you may reasonably accomplish this season toward efficiency, and map out your program of work. You will find certain men prepared to act as instructors, some noncommissioned officers who need to be developed along certain lines, some along others, and will plan work for them accordingly. So far as practicable a variety of work should be planned so that well qualified men will not have to grind along through drill movements in which they are perfect, while beginners are being practised therein. When all have become smart, then all may participate in short smart drills. This can be hastened by excusing men from any given drill as fast as they show proficiency therein. This requires a definite plan of progressive work, certain new movements for each drill, and stimulates individual study, and effort at drill. Those excused could go to the shooting gallery, or some other interesting work provided in your program. In any case company drill is no place for recruit instruction. While that is being given, older men should be engaged in one or several of the other subjects in which training is necessary. This requires qualified instructors, and again calls for extra work in preparation on the part of the noncommissioned officers. To sum up, the commander should give the necessary time to planning before the drill season opens, and then he may have the satisfaction of seeing results follow the development of the work.

Practical Suggestions, Close Order Drills.—Do not waste the time of the men by reciting lengthy explanations. Men cannot learn that way, and you know it, if you recall when you were in ranks. Get busy doing things, and briefly correcting individual vital mistakes.

And do not waste the time of all in teaching one man what is already known to the others. If he is clearly outclassed, he should be taken out and given to some noncommissioned officer for individual instruction. A few doses of that will inspire him to the additional effort.

In dismounted drill the accuracy of the movements depends on the correctness of the movements of the men's feet. Therefore you must watch the feet to catch the mistakes that are spoiling the drill. To illustrate: I have watched a lieutenant trying in vain to make his platoon execute properly "platoon right" from a halt, and it was always ragged. Had he watched the men's feet at the command "march," he would have seen that, where every man should step off simultaneously in the right oblique with a full thirty-inch step, they were taking one or two hesitating steps. Try this movement as a lesson to yourself as drill instructor. You may have to face in the same direction as the men and show them how to step off freely in the oblique at the command; you may even have to require them to take the position of the first step completed without marching, to show them what the correct step should be. You will have interested yourself and the men if you get it correctly. And so in all dismounted movements, watch the feet. In mounted drill, the horse takes the place of the men's feet, and accuracy of the movements depends upon the man's control of the horse. Hence in mounted drills, you must watch the movements of the horses, as you did the men's feet in dismounted drill.

If you would only appreciate the tremendous advantage of *commenting* on the various movements at drill. You are out there as an instructor, a critic of their work. You command "squads right, march." The men try to execute it properly. You say nothing, but perhaps give the same command again. They wonder why. Was some one wrong? Who? No one knows. If it was done correctly, they should have the satisfaction of knowing it; call out, "good." If you think it could be done better, say so; explain wherein, and order it again. Make the drill personal to each man, vitalize it, show the men that you know good work from bad, and that you want only good. Use your voice. Perhaps the general execution is poor; the men are careless, perhaps they have not yet settled down to business. The tone of your command as you repeat it will be the only comment necessary, and each man will realize that he must wake up.

But where all are trying to drill well, and it is up to you to see that they are, if a movement has been marred by certain individuals, *they should be corrected personally* Where all, officers and men, are working together to learn the game, there is no affront in a personal correction, unless you unfortunately put it in your tone or manner in making the correction. Where the mistakes result from shiftlessness, a little affront might be timely, and is no more than due to the others who are trying. Take a case: a certain captain had evidently determined once for all to see that his troop mounted properly. At the command "mount" the troop did excellently, excepting three men who missed it. Without a word of reason why, the captain dismounted the troop and again mounted them. This time the execution was as a whole very good. Still without comment, he repeated the whole thing and this time results were barely good. The lesson is plain. The men became indifferent, not knowing what was in the captain's mind. At the first mount he could have said "very good, except Smith, Jones and Andrews," and told wherein they failed. Then, "Let's make this perfect," or "for the sake of those three men we have to do it over." In that way he makes it personal and vital. You must learn to talk as situations demand it. A company could arrange to have a phonograph grind out commands, if that were all it needed for drill.

Commands.—The actual *giving of commands* at drill is an art in itself. In addition to the instructions of your drill manual, remember always that your command is for the man furthest from you, the rear man in a column as well as the leading, and *insist on his obeying* your command of execution as exactly as the leading man.

Use your natural voice, otherwise in time of excitement you are very likely to change from your normal voice and thus betray yourself as excited; and, too, your men should be able to recognize your voice in work by night.

Experiment with giving commands, and you will find that by your manner and tone of voice alone you can actually control the kind of execution your command receives. You can get careful, deliberate results, or quick nervous ones, as you desire. Your tone may be such as fairly to put the men to sleep, or it may have such vim that some muscle must jump at the command of execution. How often we see all the snap taken out of a company by an officer whose commands lack punch and vitality.

And again a skilful officer will by his tone of command, lift a company out of its dream and inject life and snap into every movement; best of all, he can take an outfit that has become "rattled" through poor leadership, the men nervously trying hard but unable to do anything correctly, and with a few quietly given commands bring them back to easy control and accurate performance. If you aspire to become a reasonably good drill master you must study the art of giving commands properly.

An order in the regular service requires men to execute the movement they believe was intended when an incorrect command has been given. While this may do where long practice makes the men fairly sure what is intended, it will hardly do in the Volunteers. Two different interpretations of a command are enough, if acted upon by individuals, to convert a military formation into a mass from which it can be extricated by no military command other than "fall in," or "assemble." It is furthermore bad habit-forming to teach men to do what they think is right, rather than to obey implicitly the commands of their leader. It is better that all obey the command given, if possible of execution, thus keeping the company in some military formation admitting of quick correction by military commands; and also clearly fixing the blame for the mistake on the responsible party.

In dismounted movements from a halt, the men sway their bodies slightly forward and to the right at the preparatory command, to put the centre of gravity of their bodies over the right leg so it may lift and propel the body forward as the left leg swings smartly its full thirty inches to the front at the command " March." This corresponds to " gathering the horse " at mounted drill, to enable him likewise to step off smartly at the command of execution. This preparation for the command of execution makes it imperative, if you want a smart movement, that the command *be given* after a uniform length of pause, and not held indefinitely. If it has been necessary to inject explanations or other remarks, after giving the preparatory command, this command should always be repeated before giving that of execution.

Chiefs of platoons and file closers must always avoid talking to the men in ranks when the instructor is making explanations, or giving commands. It is impossible for a man in ranks to give attention to two men at once. And their corrections must be directed to the individual at fault, first calling his name, and using a tone that will carry to him alone—all this to avoid distracting the attention of the men. It is a custom of the service for file closers to consider themselves rather ornamental than useful. We frequently hear the commander cautioning them at least to keep out of the way. A great mistake. They can be made so helpful. Make them feel that they have an important part to play in watching for mistakes and correcting them before quite committed, and in keeping the men alert and soldierly. Give each his own part of the line to watch, his " fire sector " as it were, and get after him now and then, instead of correcting the man himself, whom the file closer should have corrected. It is a good sign to see a file closer call an individual to attention when the company has been given " rest," and give him some needed instruction. It will not only help this individual, but will add to the attentiveness of the others during the remainder of the drill.

Guides, and Uniformity of Gaits.—Attention to these is one of the most essential things to the excellence of drill. The best drill will be spoiled by the failure in either of these essentials. Instruction should include close attention to them from the first.

As any man may find himself a guide at any time, it is absolutely necessary that every recruit be taught how to march in a straight line always keeping two points well in front of him in his line of march; how to pick up the new direction after a wheel or turn, quickly and accurately at the correct angle; and the vital importance of holding the gait uniform as the guide shifts from one man to another.

Next, all leaders must appreciate the importance of announcing the guide whenever the movement calls for it, of seeing that there is no misunderstanding as to what *individual is* the guide, and of constantly watching that this guide be correct as to direction and gait In each movement and part of a movement there is always *one man* responsible for direction and gait. Unless your study of each movement includes an understanding of who he is in each case, you are powerless to make proper corrections or to assist properly in the execution of movements at drill. The book covers this matter in every case; it is impracticable to repeat the rules here. The great thing is to impress upon you the necessity of considering the guide and the gait in every movement. Remember this general rule: Whenever two or more men march beside each other, they form a rank, and there is always one individual man in that rank who is responsible for its gait and direction, *the guide*—and the others must regulate themselves on him.

Setting up Drills.—Every arm of the service recognizes the value of these drills in controlled physical exercise. They are splendid training in discipline, and in muscular control and co-ordination. Given regularly right after reveille, and followed by the morning wash, or swim if possible, they prepare body and mind for the keen work of the day. They are equally advantageous in lending a refreshing variety in drills of precision. Both the military carriage, and a soldier's duties, demand a coordination and balance of the muscles not often found in civil life, while the seat mounted is an impossibility unless the back and loins are supple to a degree. To get their full benefit, all setting up exercises must be done with both force and rhythm, and should be done in a cheerful spirit, which will be inspired by the manner of the instructor. This is no place for verbal instruction, the men will keep their eyes on the leader and will quickly pick up any movement by imitation. A skilled leader should set the pace, standing well in front, faced the same way as the men; while the instructor watches the squad, and gives the commands and counts in a tone of voice suited to the movements he desires, sharp for the snappy ones, full and firm for the slower ones.

Manuals of the Arms.—Learning the manuals should be largely up to the individual efforts of the soldier himself. You have no time for teaching them. The West Point cadet practises them before the mirror, and I know no other way in which they may be learned so accurately and quickly. The individual should have the privilege of using a rifle, saber and pistol for this purpose; and alone with his open book, facing himself in the mirror, he can rapidly perfect himself, and save his squad and his squad leader much annoyance.

Let him observe the fundamental principle, to handle his weapon always by the muscles of his arms alone. He should acquire such familiarity with its balance and feel, that he can snap it about fearlessly and accurately, nor need to dodge lest he hit himself on the head. Nothing will control the cadence like counting aloud in a *firm tone* in the same cadence as the quick time march.

In recruit instruction much time and annoyance will be saved by using the squad to illustrate in every one of its details the mechanism of each movement before you begin to drill it. That is, have your squad perform it one step at a time; if necessary, actually place each man, *and his feet,* in the correct position; then, all standing fast, have them look it over, and, proceeding thus, you may end by their all getting a clear mental picture of how it is done, which will make perfect performance much more quickly possible.

Extended Order.—But close order drill may properly occupy but a small fraction of your time. The extended order and battle exercises offer the most interesting field for training, for the men are learning the mechanism of control that will be actually used in battle, the actual "plays" they are going to make in the coming contest.

Here the squad leader and his team are first found as an individual unit of the company. Here the corporal first realizes his personal importance in the machine, and his responsibility for its successful working. Here he gets his best chance for self training as a leader, and for training his team to work together as an efficient unit. And these teams must be perfected as such, for the company drill is but the captain handling his squads as individual elements of his own team, the company.

In the regular service, these drills are conducted "at ease," the design being to develop the initiative of the men. For the citizen soldier, they may well be conducted on the drill field with the same precision and attention to accuracy, as the drills in close order. You need the training in discipline, for which you have so little time; and you do not need any training in initiative. You get that in your daily walk, trying to make a living. But later, working on varied ground, applying these drills, you must drop all thought of precision, and give your initiative full play.

Battle Exercises.—These are held out-of-doors, on varied ground, preferably unfamiliar, and are for the purpose of *practising* the "plays" you have learned at drill, developing the leader's ability to make quick decisions in emergency, to use the right "play" for the occasion, to keep quiet control in excitement. They are the practical end of training, absolutely necessary to fitness for war. Without them, you are no more ready for a fight than a boxer who had learned the blows, the parries, and the foot work, but had never practised them on a friendly opponent. You will have to act almost as quickly as he, and, under the terrific strain of the battlefield, will need that much practice shall have made correct decisions come to you intuitively.

For this reason these exercises are always made as real as possible, by assuming in each case a reasonable military situation, of which your exercise is a part, by always explaining in advance this situation to the men so they may know why they are "making these special plays," by never repeating the same exercise twice alike, by assuming the presence of an enemy and representing him when possible, and by the use of blank ammunition to lend added reality. They should be made very simple at first; you will find that the simplest, if at all realistic, will give you all the excitement and confusion you can well handle. Squad problems are large enough; in fact, until the squad leader can exercise intelligent, quiet control of his squad in emergency, it is folly for the captain to attempt to handle the company.

If you think this too simple, try it. Plan to conduct a squad as part of a problem through some section of broken country, and let two men representing an enemy, unexpectedly open fire on you from ambush. If you then handle your men properly, calm their excitement rather than increase it by your own—report the fact at Washington. We need you in the regular service. You will more likely be convinced of the vast need for more of just such practice.

Every command must have it, and should find some way to get it. And it is quite as important for the general, the army commander, to have this practice, as for the squad leader. Yet this is made quite impossible in the regular service, by the paucity of soldiers and their dispersion for economic purposes in small, widely separated posts. That officer is rare, above the grade of major, who has opportunity to practise himself and his command in actual control for battle.

But small commands can arrange to get it. Certain militia organizations march out into the country on Saturday afternoons, bivouac for the night in some pleasant spot, and spend Sunday forenoon in carrying out some carefully thought out exercises. These expeditions are made strictly military; and are thus as helpful in the training, as they are healthful and delightful outings for the men. And again, where suitable ground can be reached in time, the long spring evenings offer ample time for interesting practical work in patrolling, outposting, and similar exercises

It is only thus that you will get any clear conceptions of troop leading, of combat, patrolling, marching and bivouacing. And this is the kind of soldiering, not drill in close order, that the man had in mind when he enlisted. He deserves to get it; and is defrauded unless he gets some experience in roughing it, in the thrill of an advance to the attack, or the stealthy approach of a patrol.

In all these exercises, a sense of *reality* must lend the element of excitement and earnestness, so important for the pyschological training in control. This is best done by the use of blank ammunition. You will be astonished to find how at first a single unexpected shot will start the heart beats, and how a few volleys will set all your nerves a tingle. These are the conditions that show up a man's qualities for leadership. And it is *leaders* the nation is seeking. In every organization, the officers should be looking out for the men who here show qualities of leadership, and give them opportunities for their development. The idea should prevail that every man is a potential leader, and that his country may need him as such. This will make them eager to learn their parts better.

The company is the highest organization in which the commander deals directly with the individual men. Drills and exercises of larger units are primarily for the benefit of the officers. The men, however, get the benefit, when each organization is handled smartly by its leader, made to work smoothly as a well drilled team, its elements always in good order. And this idea must carry through, down to include the squad. In reality the squad is the prime unit for training individuals, particularly in these extended order exercises. Here the leader best studies his men, to learn their individual peculiarities and capabilities. And this he must do faithfully, for it will be vital later that he know which man to send on any given important mission. Well, too, that he keep in mind that his men are studying him as well. He may make mistakes, but if he hopes ever to lead these men in battle, let them not be mistakes of weakness, indecision, or failure to jump into openings that may offer.

The squad leader should realize that he is responsible that all his men know their parts so well that he can handle them with perfect control in whatever conditions arise in unknown varied ground. He must practise them in advancing through country with the best possible concealment and the least loss of time and control; in quickly and quietly occupying a given firing position in all kinds of places and under all manner of circumstances; in delivering the kind of fire he wants, and at the exact desired objective; in changing the fire, and the objective; in rushing forward properly in line, and occupying a new position; in scouting, in rallying; in fact, in all the experiences of the field, he must be sure through much mutual practice that they will understand his will, and know how to perform it accurately.

One of the most difficult things will be to designate the desired objective for their fire. The living target may not be visible, probably will not be. The enemy will seek concealment, and avoid conspicuous aiming points. You have got to direct the fire of your men so the bullets will strike more than a half mile away in a limited space which you can barely make out with your field glasses. This means for you not only the ability to estimate the range correctly, but equally important, the ability to define the location of that space to your men in such a way that they may aim correctly to hit it. Try this for an objective difficult to point out, and you will appreciate the need for much practice. You may then abjure the pernicious habit of designating the target at drill by the lazy means of commanding, "at the enemy," when there is no enemy. Rather you will select a target difficult to locate, and require the men to follow your definition of it attentively, till they are aiming at the exact point desired. Then, in the excitement of battle, habit may induce them to look to you for directions where to fire. Otherwise they will fire at will at what seems the most dangerous target, and perhaps by so doing, defeat the very object of your being in line at all. And how many nicely laid plans have been defeated by the premature firing of some undisciplined soldier, too nervous to play his part properly in the team work!

The best practice is to designate some distinctive object in the field of view which the men cannot miss, from which as a datum point the target may be found as so many fingers, or so many rear sight leaves, away to the right or left. Direction is quite accurately described by reference to the clock dial, assumed to be spread horizontally on the ground, with 12 o'clock the perpendicular straight to our front.

Leaders are going to fall out unexpectedly in the battle. This suggests most important practice. Arrange that certain ones shall drop out unexpectedly, without warning, at critical moments in the development of an exercise. See that the next man quietly assumes the responsibility of leadership, without confusing the men. They should be accustomed to this by practice, so that it will not shock them in battle.

And in all these exercises, expect many mistakes to be made. Do not try to avoid them by telling your leaders in advance how to handle each situation. No one is going to be able to tell them in battle; and only by personal experience can their minds be trained to do this thinking correctly for themselves. Sacrifice your desire to pull off a perfect exercise, to the greater good of developing their iniative, and willingness to take responsibility.

He will be an impossible leader on the battlefield, who, suddenly confronted by a situation, tries to stop and think how Alexander or Baden-Powell would have handled it. Rather let him then respond to the impulse of the recollection that both were men of wonderful nerve, and above all *resource;* and let him realize now, in his training, that the development of these qualities by practice, is going to result in some hope of his having on the battlefield enough of these faculties to make his own quick decision the best rule of conduct.

Once out in the country, it takes only a fair imagination, and an honest willingness to use your brain, to devise an endless series of small exercises, in patrol, outpost, attack and similar problems, one squad against another, introducing an element of surprise, in all which both you and your men will be getting the practice that will develop the qualities of courage, steady nerve, and resource, so necessary for all in battle.

Night exercises are particularly valuable for this training. You will be astonished to find how darkness will magnify the soldier's terror, and diminish his common sense and courage. Practice only will ever enable you to operate at all after dark. From adjusting equipment hurriedly in the dark, to keeping up proper communication and control in the advance to an attack, each step should be practiced, until familiarity has developed faculties and steady nerves in these unusual conditions.

Always, and preferably at once on the immediate ground, each exercise should be discussed, how it could have been done, and how not. And in these discussions, do not arbitrate solely according to fixed precepts. Encourage the use of expedients, above all the application of cunning and common sense. These will be invaluable qualities for men engaged in small affairs, scouting, patrolling, etc. Even in large battles, as that of the Yalu, successful generals have resorted to schemes to fool the enemy, which smaller minds would have discarded as being too much like horseplay.* All the more in the presence of aeroplane reconnaissance, it will be necessary to understand concealment, and to employ ruses for giving false information.

It is impossible even to suggest the various necessary exercises here. Your own intelligent and active interest must plan them for you. If work is such that many must be idle, while the few are engaged, plan to occupy this time with interesting instruction or practice; estimating distances, explaining some interesting thing connected with the service, form two circuits of the men and hold a competition in the correct transmission of a verbal message, a contest in signalling, in caring for a comrade wounded in some specified manner, etc., etc. Forethought on your part will provide for this. And whatever you do, explain your *object* and *reasons,* and thus enlist intelligent co-operation.

Practical Instructions.—There are so many homely things that even a well drilled soldier must know before he is fit to go into campaign: the proper use of equipment, individual cooking and tent pitching, use of his arms and their proper care, packing the haversack, man, horse, and wagon, first aid to the wounded, and so on. They will seem endless; and there is just one way to learn them, and that is *one thing at a time.* This is an important part of the captain's schedule spoken of before. He will list the things he is going to teach, determine the time he can give to each, and then apportion them to the drill periods available. Most of this instruction can best be given by noncommissioned officers to small groups, for it consists largely in illustration and practice under supervision, where a few men only, are much more satisfactorily handled than many. System, forethought and previous preparation in each case, will enable you to cover the whole ground quite satisfactorily. It will lend variety and a practical interest to the drill period, which will result in the men's leaving it with an added assurance of accomplishment.

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* Read Col. Mallison's "Ruses and Stratagems of War."

All of the above must have impressed you with the great amount of time necessary for training soldiers, and how small a portion of it may rightly be given to close order drill. That is just, and is the reason why such importance is given to trying to make your close order drill what it should be. You will then be justified in giving little time to it—while if you fail to make it what it should be, the less time you give to it the better.

Maneuvers.—These are the battle exercises described above, on a larger scale, and include also training in as much as possible of practical field work, marching, camping, sanitation, supply, all the experiences of field service. They are the ultimate goal of peace training, and our final test of leadership, organization, supply, in fact of our general fitness.

There is no need to consider here their absolute necessity in fitting for campaign our commanding generals and their staffs. For you, their great value is two-fold: practical experience in the care of men and matériel in the field, and the psychological training in leadership and control. There is no need to caution you to make conditions real, to enter with zest into the battle exercises. Pride, and the desire to win the decision, do that—to excess. The need is for you to go slower, to avoid excitement, to try to keep that control of your men which you know to be so necessary in battle; to try to keep your head clear, and, remembering the fundamental principles of tactics, see that you violate none of them; to avoid letting your desire to win lead you to violate the rules of the game, do something you know you would not undertake in actual warfare. The whole success of these exercises lies in everyone playing the game honestly, according to the rules.

And if you want to get the greatest good, and to win the astonished applause of the umpires, go into them highly resolved that, under sudden fire or unexpected orders to deploy, you will not lead a bunch of sheep to the attack, but will handle your men properly, using the mechanism of control you have taught them. Some senior officer may be wildly waving his arms and shouting orders; swear that you will lead your command properly, if it takes another half minute. It will be a rare sight, and bring joy in headquarters. This may seem exaggerated; read the report of an umpire at a recent maneuver:

"The conduct of the troops in battle action, especially in the initial deployments upon getting contact, generally showed an utter disregard of the mechanism of control prescribed in the Infantry manual, or of any other; organizations were often advanced like a flock of sheep rather than as a well-regulated fighting machine, and the men were thus taught habits of confused action rather than those of the sure control that should obtain. Recommended: That in each command preliminary field training be required, specifying that each unit from squad up to battalion, shall be given such experience in deploying from patrol and march formations to meet unexpected fire in unfamiliar surroundings, as will satisfy the commander that each unit leader is able to execute a sudden call to go into action, without undue excitement or loss of control. Also, that during maneuvers, commanders shall be instructed to look upon each engagement with the enemy as an unusual opportunity for exercising their commands in the mechanism of the attack; and that their success will be judged by the nicety of control, use of ground, and fire discipline that they attain, rather than by the speed with which they move forward. This may result in sometimes seeing troops actually advanced in maneuvers somewhat as they should be in war."

The point is to go to maneuvers, appreciating the rare opportunity they offer, both for practical field training and for developing battle qualities; and then to determine to justify the government in sending you by using your brain and body to capacity, in trying to get the most possible good out of these opportunities.

Map Maneuvers.—Where out-door work in varied terrain is impracticable, and even as a preparation for it where time admits, it is most helpful and interesting to conduct these tactical exercises theoretically on a large scale map, or other representation of the actual ground It is beyond the scope of this book to go into the detail of this kind of instruction. It can be properly given only by an instructor who has fitted himself for it. He can do this by studying Sayre's "Map Maneuvers and Tactical Rides," by practice, and by attempting at first only the simplest situations. Each captain should add this ability to his repertoire.

The most training can be given in the "one sided maneuver," where the instructor may carry the situation along rapidly, introducing phases at will to illustrate any desired tactical point, and to test the men's ability in whatever he desires. This is an excellent way to give training in patrolling, as so many situations may be introduced in a short time, especially good for training in deciding whether messages should be sent, and how, and in giving much practice in actually writing them. In this one sided maneuver it is also possible to discuss and criticize each step as it occurs—a great advantage, not possible in the two sided, where all criticism must be left till the end, when much is forgotten.

I have found by experience that for instructing a class larger than a half dozen, the best way is to hang the large scale map on a side wall, see that it is properly lighted, and then group the class sitting in a close semicircle before it. As many as thirty can thus be engaged simultaneously, and by calling first one then another to command the situations as they arise, all are kept keenly interested.

To do this, requires for all an ability to read maps with facility. This is discussed in a later chapter. But maps are not absolutely necessary. Baden-Powell describes representing the terrain for a map problem, by spreading his horse cover on the ground, and putting underneath different sized stones, turfs, etc., arranged to make the different hills and valleys that he wanted. You may devise an equivalent. A large sand table can be made into a relief map for this practice. But the best instruction to the most men will be given on the map hung where all may see it equally well. The Gettysburg map, 12 inches to the mile, mounted on muslin, is designed for this, and may be had from the Book Department, Army Service Schools, Fort Leavenworth, Kansas.

Training for Immediate War.—This differs from peace training, mostly in intensity. It offers far greater advantages, but demands far quicker results. You will be camped in the country, it is hoped in surroundings suitable to field exercises. The men will be tremendously keen, for each will realize the need of being the best soldier he is capable of becoming. Training will be the one only thought of all, the distractions of civil pursuits having been definitely put aside. Physical training, so difficult to keep up in peace time, will be the shibboleth of all. Enthusiasm will be high, unless dampened by the stupidity of leaders devoid of soul and imagination. It will in fact be a veritable drill heaven for those who have learned the game, and can enter into its spirit.

Here the program for systematic progressive work recommended for peace training, becomes an absolute necessity. You will get nowhere without it. And the system for preliminary training of officers and noncommissioned officers together in a squad, keeping just in advance of the work given the men, is of great value at first. Men will come from different schools of training, and from none. This method quickly brings them to the uniform standard desired by the commander. In organizing the 43rd U. S. Volunteers in 1899, for the first hour each morning we had all the officers and noncommissioned officers of the regiment, assembled into one large company, the captains as sergeants, the lieutenants as corporals, and the noncommissioned officers as privates.

We drilled and instructed this company during that hour in the chosen work for that day, and then required them to give during the day exactly the same work to their men, and none other. This produced uniformity and quick results, and was good so far. But to-day I would appreciate the need for more development of initiative, and would confine it to preliminary drills only, till I was sure that all were working along the same lines. But in this, each commanding officer, considering first his own personality and capacities, and then his particular problem in training, must bring to its solution the best methods at his command.

In Conclusion.—It is admitted that the peace training of each command must be influenced by environment. It is even possible that some organizations may never get practice in real ground, until mobilized for war. It is hoped, however, that each will have caught such an appreciation of the necessity for these various kinds of training, that real effort will be made to get them for their men. In reality it is generally the lack of mental punch, of willingness to bestir themselves, that keeps most commanders from giving their men proper training. They have been in uniform too long, or lack the imagination and keenness of youth, which would make them discard old fogy ideas of stupid drills, and step out and make training what it should be.

Let these things be remembered:

That we are attempting to accomplish in short periods, the equivalent of two years' solid training.

That this system demands our using the intelligence of the men, in requiring a large degree of self-instruction; and our depending on punch, and speed, and clever direction, to develop the fighting qualities, rather than on old time peace methods of long continued drill.

That the training is to make resourceful self-reliant men, rather than automatons, and must therefore include much practical work in actual conditions.

That the close order drill therefore becomes little more than a sharp practice of well known movements for developing discipline, in which the instructor is the ruthless infallible coach; and that he may accomplish this only by enlisting the intelligent co-operation of the men.

Remember that the men start keenly interested. This interest must be fed, not killed by stupid drills. Tell them that drill is for *practice;* and that they must come prepared, so time may be saved for more interesting work. If then some individual come to drill unprepared, throw him out of the squad as unfit. He will come prepared next time, or not at all—a gain for the squad in either case. But give him a chance to prepare, by announcing ahead of time short lessons for the next period.

Catch the *spirit* of these various drills. Appreciate their relative values, and their great need. You know how short is your time for training, see that none is wasted. Occupy every minute, and you will still despair of doing one half enough. Keep ahead of your men, and sustain their enthusiasm with work that is full of punch and go, if you have to sit up all night preparing for it.

You will make mistakes. The best of us do. But you will not make the same mistake twice. And thus you will see yourself grow, and your men grow. You will see your organization gaining in *esprit,* and attaining a reputation for excellence. You will be proud of your company, and proud of your captain. You will delight in the service, and really enjoy the details of drill and instruction. Till finally, if called to war, with what confidence in yourself and your fellows, with what a morale, you may go to meet it!

CHAPTER IV

ORGANIZATION

The primary object of organization is to marshall all the forces of the nation; its millions of men and thousands of horses, its railroads and auto transports, its resources for munitions and every reservoir of supply, and the brains and machinery for administering them; so that all these forces may be handled as a unit, all brought to bear at a given point and time, as a powerful weapon in the hands of government.

The actual fighting forces are but the keen edge of this mighty blade, whose sterling worth must depend on the mass and quality of the metal behind it, to give force to its blows and to renew the edge when worn away in service. The fashioning of this knife, the concentrating and properly ordering all our resources into this mighty whole, the training of intellect and will to direct it, this is the problem which confronts us.

When war comes the life of the nation is at stake, and the conduct of war will become a life saving process. All commercial and civil propositions become subordinate, railroads, transports, factories, labor, all institutions drop their individual aspirations, and lend themselves to the best interests of government. And we must be prepared to use intelligently these vast agencies. There will be a place for each of their highly developed specialized experts, where their peculiar capacities can be of inestimable service to the nation. Not as members of the active fighting machine, but as directing powers nearer the sources of supply, they will assure the arrival in the zone of actual operations of all those resources which the trained army officers will there know how to use.

This task of organization is no myth. It is the one vital thing for the success of our arms, and the life of our nation. It is a concrete thing that has got to be accomplished, before we may think of calling ourselves prepared. It will demand the best minds at our disposal, the most ardent application to the problem, and above all the loyal support of the body politic.

Organization has always been the direct responsibility and function of Congress, which has dictated all its details. Its study is a continuing function, emitting frequent changes; sometimes on the recommendation of the War College, for military reasons; sometimes the direct action of Congress, for other reasons. As soldiers, you need only a picture of the general scheme of the organization of an army, into which to fit the part you have chosen; as citizens, you need a clear realization of the fact that organization is a vital matter demanding the judgment of highly trained experts.

Considering the organization of an army itself, its object is, that all these men and animals may be fed, armed, equipped, disciplined and transported at the will of the commander; and above all that they may be fought in battle, every ounce of all this energy instantly controlled and directed by the will of the chief. We have seen how the men are grouped in training from the squad up, and how subordination welds them into a loyal team. Back down through these same steps, from leader to subordinate leader, comes the will of the commanding general, till the squad leaders have transmitted it to their men, and the whole machine is moving uniformly, accurately responsive to the master mind.

And no matter how many men be brought together in one field of operations, from a few men working as a patrol, to the hundreds of thousands when field armies are united, proper organization provides, and the principle of subordination demands, that there shall always be *one* individual, senior in rank to all others present, on whom alone rests the entire responsibility of command, to whom all others are subordinate, loyally executing his will.

The Infantry Division, in our service, is the proper command for a major general; in foreign armies, for a lieutenant general. It is the smallest unit that has even the semblance of an army, that may operate independently containing in its own organization a suitable proportion of the various fighting arms, auxiliary troops, and administrative machinery. In our regular service, we have none, except theoretically, and these are devoid of aero squadrons, auto transports, and cycle corps, indispensable adjuncts in modern warfare. I believe our nearest approach to the actual existence of such a command is the Division, National Guard, N. Y., which has all its components, armed and equipped, quartered within a limited area, and actively commanded, trained, and supplied, by an actual major general.

COMPOSITION OF DIVISIONS:

Infantry Division	*Cavalry Division*
Headquarters,	Headquarters,
Three brigades of infantry,	Three brigades of cavalry,
One regiment of cavalry,	One regiment of horse artillery,
One brigade of artillery,	
One pioneer battalion engineer troops,	One pioneer battalion engineer troops (mounted),
One field battalion signal troops,	One field battalion signal troops,
Trains:	Trains:
One ammunition train,	One ammunition train,
One supply train,	One supply train,
One sanitary train,	One sanitary train.
One engineer train.	

NOTE.—These regiments of cavalry and of artillery, thus made part of the Infantry Division, are known as *divisional* cavalry, and artillery, as distinguished from those arms operatingly separately.

Divisions are grouped for campaign into *field armies,* the proper command for a *Lieutenant General.* These field armies, when concentrated in one field of operations constitute an *army,* commanded by a *General.* We are now moving in the realm of dreams, having no field armies in the United States, nor lieutenant generals to command them; while generals are all but unknown in our history.

It has ever been a deplorable characteristic of ours, to shrink from giving to our higher commanders the rank commensurate with their responsibilities. In the Civil War, General Grant, exercising the command of a Field Marshal of France, with all his tremendous responsibilities, held but the rank of a corps commander. So all the great generals of that war, denied proper rank, were forced to command generals of equal grade, and therefore often forced to combat jealousy and lack of loyalty from within, as well as the enemy from without. Thus ever have our people, remembering the heel of monarchial oppression, but unfearful of the rule of the kings of finance, shrunk from full observance of the principles of organization and subordination, and willingly paid the costs of battle inefficiency, rather than bestow proper rank and title on worthy soldiers.

The Brigade, proper command for a *brigadier general,* is composed of troops of the same arm: three regiments, if infantry; two regiments, cavalry or artillery. It may be engaged independently in some small affair, when it is designated as *detached,* and may have other troops, as a cavalry squadron, temporarily attached for duty with it.

The Regiment, proper command for a *colonel,* is composed of three battalions, each commanded by a major. Each battalion has four companies, commanded by captains. The regiment is the largest *permanent* unit, and hence is the one organization of our service about which honorable traditions may cling, in which *esprit* may be fostered for its future good.

Greater efficiency would demand that regiments be *localized,* and perhaps named for their localities. Here, in peace time, men could serve with the colors, still keeping touch with home interests, able to resume their places in civil life at the expiration of their service; while in war time, local pride in the regiment and acquaintance with its personnel, would supply needed recruits; and assure kindly care for those who had been invalided home.

Depot Battalions.—The casualties of active service, will be continually reducing the number of effective men with the colors. In the Civil War, regiments were often reduced to but two or three hundred men. This reduction is provided for in all foreign armies by the organization in each regiment of a home battalion, fully officered, and maintained in the locality whence the regiment was recruited. Here, invalided officers and men come from the front for recuperation; and fresh recruits and remounts are received, and trained for service with the colors. Whenever effective fighting strength is reduced, the necessary draft is forwarded to restore it. These new men join experienced comrades, from whom they quickly learn the game; they come into an atmosphere of assurance, under officers who have made reputations. They quickly absorb traditions and *esprit* of the veterans, and, enveloped in this favorable environment, are carried through their first experiences with reasonable courage.

It is well to make this picture clear, that you may better appreciate the painful features of its reverse, found in our service, and made necessary by the volunteer system, in order to get the men for our war. Old regiments could not be recruited. It was necessary to commission new officers to get more men. Hence, while experienced officers and men were serving in dwindling regiments, these green regiments constantly appeared at the front, officers and men totally unfit through lack of training. Think what that meant of wasted lives through lack of proper care, wasted lives in battle for want of experienced leaders, prolonged warfare through lack of trained armies to bring it to a close, and, ever towering higher and higher, the hundreds of millions paid in pensions! None but a nation of unbounded wealth, would dare a policy so extravagant; none but the heedless would continue one so dangerous.

New York has provided by state law for these depot units in her organizations of the National Guard. It is hoped that this enlightened step may prove an inspiration to Congress.

The Company is the largest one-man command in which the chief deals directly with the men. Though the captain, for the sake of efficiency and training, deals largely through his lieutenants and squad leaders, he is still directly responsible for everything within the organization, food, clothing, health, training, and equipment. These enlisted men in the companies, are really *the army;* and the excellence of an army is made or marred, depending on the faithfulness and intelligence shown by the company commanders in training their men. And the highest efficiency has been attained in those armies in which the greatest latitude has been allowed the company commanders in their methods of training, while they have been held to the strictest accountability for results.

The Staff.—We have been considering *the line* of the army, its mobile fighting forces. Also of the line, and equally important for the safety of the nation, are its Coast Defenses, discussed in Chapter VIII; while most important for consideration, is *The Staff,* with its departments of administration and supply. Here are the vitals of the whole establishment. The standard of work done here will determine the whole question of success or failure for our arms. To facilitate the work of the staff, is the most delicate and important function of Organization.

No people may hope to conduct a successful war, until all the resources of the nation are properly marshalled under *one controlling mind,* which can make them all available for efficient service at the needed time and place. *This mind is the General Staff.* Its work demands the best abilities of highly trained experts. To training for this, able officers unstintingly devote their highest faculties.

Napoleon said "an army marches on its stomach," meaning it could not go far without supplies. And this is equally true to-day. But the railroads, electricity, auto transports and aeroplanes, have added such an element of speed, that it is difficult to recognize the picture. Not only have quick information and quick movement complicated the problem, but the present vastness of all the various forces employed has made the conduct of war an [illegible] beyond the brain capacity of even [illegible] no longer be conducted by a [illegible] must be prepared for and directed [illegible] mind of the General Staff.

[illegible] clever brain of the General Staff [illegible] forces at the strategic point, and often [illegible] without firing a shot. And not only [illegible] advantage of massing them there, but [illegible] forces, and the means of putting them [illegible] the policies of the nation, studies the [illegible] the world's arena, and plans to meet [illegible] It learns the resources of a [illegible] knows our own, and has them well in [illegible] case of need. This requires that all de- [illegible] be under this one directing mind; and [illegible] to make necessary provision [illegible] from the housetops. Thus only will the [illegible] to meet it, and thus only by co- [illegible] of experts may we hope for [illegible] administration. This is our [illegible] need in organization.

[illegible] Land Forces.—They consist, at this writing, of a [illegible] hundred thousand [illegible] and potentially [illegible] nation. What [illegible] these resources. [illegible] defense with at [illegible] But it will surely [illegible] much as our [illegible] beginning to ap- [illegible] need of our [illegible] our future. [illegible] action. But [illegible] fearlessly follow [illegible] realize certain [illegible] conclusions:

[illegible] within [illegible] appropriation should in all their details be determined solely by trained General Staff experts; and for military, not political reasons.

That we must keep enough professional soldiers to meet the requirements of ordinary times, without interference with the civilian's pursuits or any upheaval of business. Had we had one hundred thousand available soldiers in 1898, they could have handled that situation in the day's work, without any disturbance to business. Instead, the whole country rocked, while lawyers and bankers left their desks, and farmers and business men their occupations, to go and die in vain beds of sickness, or to return after miserable months to try to regain their business. Is that a picture to satisfy wise statesmanship!

We will come to realize the extravagance, utter futility, and even viciousness of our present volunteer system; and how it not only offends efficiency, but strikes at the very roots of true Democracy. That manhood suffrage carries with it manhood obligation. That it is most undemocratic for a citizen to elect whether or not he will prepare to defend his country in need; and that this offers a commercial premium to the selfish and disloyal, who may continue to prosecute their business, while their loyal rivals must sacrifice theirs for training in peace, and fighting in war. That it is not conducive to patriotism in the breast of the son of a Civil War soldier, to be crowded off the road to-day by the touring car of his father's once partner, who, while the father lost his business by going to war, stayed at home and amassed a fortune by manufacturing shoddy blankets for the men at the front.

England and America are the only two nations on Earth which, thanks to their volunteer systems, find themselves forced to resort to conscription in order to secure their citizens' services in war. In all other nations the duties of citizenship are universally recognized, and there is no argument as to giving military service when needed. And how genuinely democratic is this thought of universal military service! This goes for *national solidarity*. Here is no class distinction—rich and poor,

[illegible] same thing a[illegible]
[illegible] same school of
[illegible]

[illegible] to appreciate
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CHAPTER V

INFANTRY

" MODERN combat demands the highest order of training, discipline, leadership and morale on the part of the infantry.

" The duties of the infantry are many and difficult. All infantry must be fit to cope with all conditions that may arise. Modern war requires but one kind of infantry —good infantry.

" The infantry must take the offensive to gain decisive results.

" In the local combats which make up the general battle the better endurance, use of ground, fire efficiency, discipline, and training will win. It is the duty of the infantry to win the local successes which enable the commanding general to win the battle.

" The infantry must have the tenacity to hold every advantage gained, the individual and collective skill needed to master the enemy's fire, the determination to close with the enemy in attack, and to meet him with the bayonet in defense. Infantry must be trained to bear the heaviest burdens and losses, both of combat and march.

" Good infantry can defeat an enemy greatly superior in numbers, but lacking in training, discipline, leadership, and morale."

The above quotations taken from the Introduction to Part II, Infantry Drill Regulations indicate the *quality* of the infantry required for war. When it is further considered that the infantry is not only the most numerous but the most important arm, that it is charged with the main work on the field of battle, and that the rôle of an army, offensive or defensive, is determined by the rôle that may under the particular circumstances be assigned to the infantry, the supreme importance of the arm becomes apparent.

It is the infantry soldier, officer and man, who must bear the greatest stress of battle, and war is more dependent for success upon his individual action than upon any other factor. Teaching him how to fight, inculcating in him a sense of discipline, and developing his morale, are the purposes of preparation through training.

Discipline is a mental condition and means the subordination of individual impulse to the will of the leader—in other words, obedience. It ensures steadiness and makes team work possible.

Morale is a compound of various human elements—patriotism, honor, self-respect, sense of duty, devotion and self-sacrifice, courage, respect for comrades, and confidence in leader—and manifests itself on the battlefield in the unconquerable determination to win and firm belief in your ability to do so. Developing in the soldier these mental qualities—discipline and morale—is quite as essential as teaching him the formations for fighting, use of weapon, etc., and in the average case requires more time.

When we consider the infantryman's weapon and his method of fighting, the above is readily understood. His weapon is the rifle *with a bayonet;* and his methods of action are fire, and shock. All the power of the weapon is in the man himself. However skillful a shot he may have become by training, his skill is of no value in battle unless he obeys the orders of his leaders, and has the calm, cool courage to utilize his skill and to fire each shot with the determination to make it a hit. Nor can the final decision be brought about by fire action alone. His other method of action, shock, and his other weapon, the bayonet, or his willingness to employ them as evidenced by his steady advance, are needed to drive the enemy from position. He has no immovable gun to serve, there is no headlong rush of horse to carry him forward, but with fixed determination to win he slowly fights his way forward by the effort of his own will. The main object of training is to develop a morale capable of meeting this strain.

Much may be done to improve the morale of a command by giving due attention to those subjects which foster initiative and develop fighting capacity. As war is positive, not negative, the training should likewise be positive, not negative. It is easier to defend than to attack, and it is easiest to do nothing at all; but war cannot be won by such defensive action, and inaction. Troops that know how to attack will know how to defend, and undue prominence should not be given in training to purely negative and protective measures.

The only purposes of advance guards and outposts are to bring the troops to the field of battle with the least possible delay, and in the best possible condition. They are not the end, but merely the means to an end. Training has but one end in view—efficiency in the fight. While the negative subjects cannot be entirely overlooked, they should be allotted time only in accordance with their relative importance and must not be emphasized at the expense of the more important combat training.

The normal rôle of infantry in war is to attack, and it should be trained accordingly. The great essentials for infantry are that they know how to shoot, how to march, and how to fight, and possess the discipline and morale to do these things. Instruction should be centered on teaching and developing these essentials.

The Drill Regulations are the guide for training. Part I pertains to drill proper, close and extended order, and deals with combat only to the extent necessary to explain the various formations and the basic duties of the different commanders. The principles of combat are to be found in Part II. No purpose will be served by either a casual reading, or a mere memorization, of this latter part of the regulations. To be of value, the principles contained therein must be conscientiously studied, and their application understood. It is not practicable to attempt herein a detailed explanation of those principles. That must be left to practice and demonstration. Merely stating the same principles in other words would confuse rather than enlighten. Suffice to say that nowhere are the underlying principles of infantry troop-leading more clearly and more concisely stated than in Part II of our Drill Regulations, and a careful preliminary study thereof will give to the subsequent practical work on the ground a definite purpose and meaning.

Drill.—*The efficiency of an army is measured by the general efficiency of its basic units.*

Drill, both close and extended order, is treated in the various schools included in Part I of the regulations. For the purpose of progressive instruction four schools are provided:

School of the Soldier.—The object of this school is the instruction of the individual man in the facings, steps, and manual of arms.

School of the Squad.—The movements in the school are designed to make the squad a fixed unit, to give the squad leader practice in handling his men, and to facilitate control and movement in the subsequent school of the company. The mechanism of the different movements, both close and extended order, are taught in this school.

School of the Company.—This is the most important school, and the one wherein the soldier receives most of his instruction and training. The instruction is carried on progressively. First comes close order, intended to teach the men orderly movement and to accustom them to the firm control of their leaders. Next is the extended order in which the mechanism of the deployments and of the fighting formations are taught. Finally by means of field exercises, individual and collective training is given in adapting measures and formations to the changing conditions of situation and terrain.

School of the Battalion.—The battalion is primarily a tactical unit and instruction therein is mostly of a tactical nature.

The drill formations in the various schools are so fully described in the regulations that additional explanation as to the execution of particular movements is unnecessary.

Further explanation will, however, be given concerning certain rules and movements which are so fundamental in character that an early understanding of their general application will be of assistance in acquiring a working knowledge of the subject as a whole. Attention will also be called to other paragraphs, either to emphasize their importance, or because experience has shown that in the execution of the movements therein prescribed there is a tendency to commit certain well defined errors. It is to be remembered that the following comments and explanations in no way modify or replace the regulations, but are intended only as a help in making clear the meaning, intent, and application of certain paragraphs. Nor is it to be assumed that those paragraphs which are not specially mentioned are unimportant. The paragraphs of Part I appropriate for the individual study of each grade within the company are as follows:

Privates and Corporals to include the School of the Squad, paragraphs 1–158.

Sergeants and Lieutenants to include the School of the Company, paragraphs 1–257.

Captains to include the School of the Battalion, paragraphs 1–326.

Par. 6 (a)-(b).—The distinctions between close and extended order drills have been fully explained in Chapter III. It is essential that the purpose of each of these drills and the distinction between them be understood, and then kept in mind, in order that the instructor may adapt his instruction to the specific needs of his command. Troops must have close order before they are ready for extended order. Neither is to be neglected nor slighted. However, when the ends sought by either have been attained, then the instruction should progress to other work.

Par. 8.—Attention to the rules contained in this paragraph will be of assistance in remembering the various commands and their sequence. Examples illustrating (1):

1. **Take interval,** 2. **To the right,** 3. **MARCH.**

1. **Column of squads, first company, squads right,** 2. **MARCH.**

Note the arrangement of the elements of these commands —(a) Description of the movement (Take interval, Column of squads); (b) How executed or on what element executed (To the right, First Company, etc.).

Examples illustrating (2):

1. **Squads right,** 2. **MARCH.**

1. **Platoons right front into line,** 2. **MARCH.**

1. **Companies column right,** 2. **MARCH.**

Note the arrangement here: (a) The designation of the sub-divisions (Squads, Platoons, Companies); (b) the movement to be executed (right, right front into line, column right).

Par. 16.—Observe that these rules are general and serve to determine the guide for all formations.

Par. 17.—The provisions of this paragraph are fundamental and constitute the essence of most close order movements. A subdivision is a squad or platoon of a company, etc. In forming line from a column of such subdivisions, or in forming a column of such subdivisions from line, the *turn* by each subdivision is made on a *fixed pivot.* That is the pivot man of each subdivision faces to the right (left) in marching and then *marks time* until the man on the opposite flank of the subdivision is abreast of him.

Examples: Squads right, Platoons right, etc.

The turn on the *moving pivot* is used by subdivisions of a column in executing changes of direction. In this case the pivot man of each subdivision faces to the right (left) in marching and takes the *half step.*

Examples: Each rank of each squad in executing "column right" or "column left" when in column of squads. Executing changes of direction when in column of platoons or column of companies.

Par. 22.—The file-closers can add materially to the progress and success of the drill if they will fully perform their duties as indicated in the last section of this paragraph.

Par. 35.—Comply strictly with the spirit of this paragraph. Of course there is no limit to the number of signals that can be devised, as vocal speech may be entirely replaced by sign language. Devising and practising a multiplicity of signals for use under conditions and in situations where the voice can be used is a waste of time. They are less reliable than the voice. Moreover having too many signals renders less certain a definite and unfailing understanding of the few really essential ones prescribed in paragraphs 42–43.

Pars. 42-43.—The whistle and arm signals herein prescribed must be learned by every member of the company, commissioned and enlisted, and then employed with such frequency as to secure unfailing certainty of understanding and execution. Read carefully the description of each signal as given in the text and then execute exactly as prescribed.

Pars. 45-46.—The use of these flags for the purposes indicated has many practical advantages, and everyone should learn the flags of the various organizations. Note the relation between the alphabetical order of the companies, A, B, C, etc., and the sequence of colors, red, white, blue, and the identification of organization with flag becomes simple and easy to remember.

Par. 60.—The practice of continually indicating the cadence by counting or "hepping" is to be avoided. As early as possible the men must be taught to help themselves in this matter of keeping the prescribed cadence in mind, and, if necessary, to count to themselves. Constant counting or "hepping" by the instructor and file-closers is wrong in principle as it relieves the men in ranks from individual responsibility for attention and effort. The chief merit of close order drill is the discipline resulting from the strict attention required. Relieve the men from the necessity for attention, and but little benefit results from the drill.

Par. 62.—This shifting of the weight of the body to the right leg at the preparatory command should be accomplished by the soldier without perceptible change in position, and then at the command **march** the left foot should be unhesitatingly carried forward the full distance of thirty inches. While this is one of the simplest movements in the drill book, lack of precision in its execution is responsible for much raggedness in close order drill. Two common faults are:

a. The men sway or lean forward at the preparatory command, partially losing balance.

b. At the command **march**, instead of promptly stepping off with a thirty inch step, they take one or two short, hesitating steps, at once resulting in lack of alignment and some of the men being out of step.

Attention to these details from the start and before bad habits have been acquired will materially contribute to the precise and smart appearance of the drill.

Par. 74.—In the care of the rifle, serviceability for the purpose for which intended—accurate shooting—is the controlling factor. Like any other piece of mechanism it should be handled carefully and kept cleaned and oiled. The barrel should always be *cleaned from the chamber, never from the muzzle.*

Pars. 101-104.—The squad is the basis of organization and its importance should be recognized from the start. The men should be taught to look to their squad leaders for advice, assistance, and instructions under all circumstances. On the other hand, the development of efficient squad leaders requires that the responsibilities indicated in paragraph 101 be placed upon them.

In grouping the squad, place the permanent substitute squad leader as number four in the rear rank.

Par. 106.—The distance between ranks both in line and in column is forty inches, measured from the back of the man in front to the breast of the man in rear. The interval between men is four inches and is measured from elbow to elbow. The inclination is to take *more than the* *forty inches distance and less than the four inches interval.* Accuracy in the preservation of both distance and interval is necessary in order to have any degree of precision in the drill.

Par. 118.—In the execution of this movement there is a tendency for the pivot man, after facing to the right (left) in marching, to take steps longer than the prescribed half step of fifteen inches, and to resume the full step before the man on the marching flank has had time to complete the turn. This leads to the man on the marching flank either increasing the length of his step beyond the prescribed thirty inches, or increasing the cadence, or both, in order to come up with the pivot man. All of which gives the appearance of undue haste in the execution of the movement.

The man on the pivot must be cautioned to take the *half step* and no more, and to glance towards the marching flank in order that the full step be not resumed before the turn is completed by the entire rank. The man on the marching flank must be cautioned against increasing either the cadence or the length of the step or in any way improperly hastening the completion of the movement.

Par. 119.—A common tendency in this movement is a failure of the pivot man to mark time strictly in place after facing to the right (left) in marching. The man on the marching flank is inclined to hasten the completion of the movement as indicated in the paragraph above.

This movement and the one prescribed in the preceding paragraph are fundamental as they constitute the basis of most close order movements.

In connection with both paragraphs reference should be had to paragraph 17 and the explanations thereof.

Par. 124.—Observe that the deployment is made at a *run.* Note also the interval of one half pace (15 inches) between skirmishers. Frequently the skirmishers take too wide intervals. The necessity for getting sufficient rifles on the line to secure fire superiority requires economy of space on the battle front, and the interval of fifteen inches, which is sufficient to allow the men freedom of motion in handling their pieces, must not be exceeded unless deployment at increased intervals **(Par. 126)** is specifically ordered.

When deployed the men march at ease, but this *does not permit talking.*

Pars. 152-156.—The underlying principle here is that *ability to fire effectively upon the enemy is the first consideration,* and then cover. Do not reverse the principle and permit such use of cover as to interfere with efficient fire.

Par. 168.—Last clause. Note that the alignment in each rank is towards the side *opposite the file closers.* The man on that flank is responsible for maintaining accurately the distance of forty inches from the man in his front.

Par. 175.—The fundamental principle of alignment is that the instructor promptly establish three or four men at the base on the desired line. The other men will then be able quickly to align themselves on such base.

Pars. 176-184.—All of these movements are essentially combinations of the movements prescribed in paragraphs **118-119,** and the same general remarks apply.

Again refer to paragraph **17.**

Par. 191.—The requirement "the ranks cover and preserve their distance" should be strictly enforced. The command or signal **attention** should find every man in his proper relative position in the column. No running and closing up should be necessary. The tendency is for the ranks gradually to take more than the prescribed forty inches distance.

With a body of troops no larger than a company, the practical importance of this matter of elongation is not so apparent, as an elongation of say forty per cent. would lengthen the column from seventy-five to one hundred and five yards, and increase the time required for deployment by possibly a minute.

However this same percentage applied to a division, the combatant part of which forms a column ten miles long, results in an elongation of four miles. Not only has such elongation added greatly to the fatigue of the march, especially for the rear units, but it has materially increased the time required for deployment on the head of the column.

Bad habits once acquired are difficult to overcome, and troops should from the start be trained to preserve the prescribed distance when marching at route step.

Par. 206.—The corporals are inclined to overestimate the front occupied by a squad when deployed, and in leading their squads on the line to take too much interval from the next preceding squad. This results in gaps in the line between the squads, compelling the skirmishers to "roll over," or otherwise close in to the proper interval of one half pace. For the reasons given in paragraph **124** the interval of one half pace must not be exceeded.

Par. 222.—The men must be trained to *hold themselves flat* until the command "**Follow me**" is given. You must repress the natural inclination of the skirmishers to shift the positions of their bodies, and to get upon their hands and knees at the preparatory instructions for a rush. Any such preliminary movements may serve to warn the enemy that a rush is about to start, and give him time to take the necessary measures for directing an increased fire against each rush during the time the men are on their feet and necessarily presenting larger targets. On the other hand, if these rushes are initiated without "notice" to the enemy, he does not have time to effect any unusual concentration of fire against them.

Nor should the men bunch as they rush forward. While it is impracticable for men running at top speed across broken ground to keep a straight line, they can and should avoid so bunching as to get directly in rear of one another, as in this latter formation one bullet may disable two or more men, thus uselessly multiplying losses.

Pars. 232-257, 303-304, 307-314, 400-419, 432-434, 442, 458-462.—In these paragraphs are found the rules and principles pertaining to Fire Direction, Fire Control, Fire Discipline, the Fire Fight, and Fire Superiority.

As effective rifle fire is essential to victory, the importance of the above subjects to the infantryman needs no comment except to emphasize the necessity for a careful study of the paragraphs enumerated. The intent and meaning of the several paragraphs are so clear, and the discussion so complete, that explanation thereof is unnecessary. On the other hand, a summary of the subject would exclude matters of importance. In order, however, that the mechanism of control in the firings may be thoroughly understood, the following review of the duties of the various grades within the company is given:

CAPTAIN.—The captain *directs* the fire of his company. He designates the target, allots a part thereof to each platoon, announces the sight setting, indicates the kind of fire (ordinarily Fire at will) and the time to open fire. His orders and instructions are for the *platoon leaders.*

PLATOON LEADERS.—Each platoon leader puts into execution the orders of the captain. He describes the location and limits of the part of the target allotted to his platoon, announces the sight setting, and at signal from the captain, opens the kind of fire ordered. Thereafter he must carefully observe the target and the effects of the fire in order to correct any error in the estimate of the range. His effort is to place the densest part of the cone of fire in the target.

PLATOON GUIDES.—The duties of the platoon guides are disciplinary. They watch the firing line and at once check any breach of fire discipline.

SQUAD LEADERS.—The squad leaders transmit to their squads the orders and signals of the platoon leaders, and they must be on the alert for such orders and signals. They assure themselves that the men of their squads see the target and have their sights set at the range indicated. They at once check any wild firing or excitement and at all times assist in maintaining fire discipline. From their positions in the centre of their squads they can perform these duties, exerting at all times the necessary influence over the skirmishers, and yet participate in the firing. They must not, because they are in the firing line, simply be "one of the squad," but must retain the character of leader. And in action they must remember that the efficient firing of their squads is of more importance than their own individual skill in marksmanship, however excellent shots they may be.

PRIVATES.—The private must look to his squad leader for instructions and promptly obey every order or signal. In executing the firings on the drill ground he should always select a definite aiming point within the target and then hold, aim, and pull the trigger properly. In action he must practice what he has learned by training. He must endeavor to make hits instead of misses. His determination to make each shot a hit will of itself regulate the rate of fire. He must remember that the *more effective his fire, the less effective be the fire of the enemy.* That such superiority of fire ensures victory, and is the best protection that can be given him in advancing to the attack.

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Statistics show that in battle the percentage of casualties is much higher among the officers than among those in ranks. A severe action deprives not one but many companies of all officers. But even those companies which have suffered heavy losses, including all their officers, will be capable of further sustained effort if the remaining leaders are equal to their tasks. This, however, requires that the sergeants and corporals be leaders in fact as well as in name—that they be trained in the functions of leadership. No matter how short the period of enrollment, how limited the time available for training, especial effort must be made to improve the military judgment of these noncommissioned officers, and to develop their capacity for leadership.

SUGGESTIONS IN GIVING INSTRUCTION

Successful instruction is a combination of verbal explanation and demonstration. The former supplies correct ideas and gives to the latter an interest and purpose. Men cannot be expected to take much interest in work the purpose of which they do not understand, and without interest substantial progress is impossible.

The instructor must keep in mind the ultimate object of all training, success in battle, and then apply each of the various classes of drill and instruction to that definite end. It is only by thus keeping the ultimate purpose in view that he will recognize when the ends of training in any particular subject have been attained, and avoid either slighting a subject or emphasizing it at the expense of another. As the purpose of close order drill is to teach the men orderly movement and to accustom them to habits of obedience, these results once obtained, but little time thereafter is required to maintain reasonable efficiency therein, and the bulk of the time can be more profitably employed at other work. Similarly, the mechanism of extended order learned, further instruction should then take the form of combat exercises against an imaginary, outlined, or represented, enemy. Into such combat exercises enter the discipline derived from close order, the mechanism of combat and control obtained by extended order, and in addition thereto all grades are practised in the duties that would actually befall them in battle, and their judgment and capacity for the performance of those duties are thus improved.

Therefore the instruction should be progressive, each period having a definite purpose, and designed to teach a definite lesson.

The instructor must demonstrate his own proficiency and his interest in the work in order to secure the best efforts and co-operation of those under him. In the close order work careful attention to the method of giving commands, as explained in paragraphs 38-40, is necessary for precise drill. When a movement is well executed, say so. If improperly executed, explain wherein it was faulty, and then repeat it. Do not, however, repeat a movement over and over again without such explanation, otherwise none will know who was at fault or what mistake was made, and improvement will be impossible. In executing the firings, the sight setting announced should correspond with the actual range. Do not designate as target some object one hundred yards distant, and then announce a sight setting of say seven hundred yards. Estimate the range carefully, and then order a sight setting in accordance therewith. And from the very commencement of the firings, cultivate in the soldier the habit of always selecting within the target some definite point of aim, and then aiming as carefully as though he were actually firing at the target with ball cartridges.

In the extended order work encourage in the subordinates a willingness and capacity to lead. The captain should not endeavor to command personally each of the various platoons and squads, but should limit himself to commanding platoon and squad leaders, who in turn command and lead their respective units.

In conducting a combat exercise the instructor first carefully explains to the entire command the nature and purpose of the exercise and the particular lessons he wishes to teach. The exercise is then carried out, after which the command is again assembled, preferably at some point affording a good view of the terrain under consideration, and the good and bad features of the work brought to notice. In his comments the instructor should avoid mere fault-finding. Here, as elsewhere in the training of troops, criticism should be constructive, and, after calling attention to a mistake, the correct way of doing that particular thing should always be fully and patiently explained.

CHAPTER VI

CAVALRY

1. Fundamentally the Cavalry, like the Artillery, is an auxiliary arm. *The Infantry is the army,* its success or defeat decides the ultimate issue. Cavalry and Artillery may be called upon to make the last sacrifice to save the day for the Infantry, and they must enter into such engagement whole heartedly, not grumblingly and with disgust at the "Doughboys." How important then that peace training include an *entente cordiale* between the arms, rather than the slurs and cheap witticisms so often heard. These have been known to result in mutual bitterness and enmity, and have been found an expensive luxury on many a battlefield where co-operation was essential to success.

2. The first weapon of the cavalryman is his horse; and an opportunity to charge home is his chief delight. With the new sabre, and particularly with the Colt Automatic 45 calibre pistol, he is the best armed cavalryman in the world. Even where ground is difficult, bold, skillful leadership will often carry trained cavalry to success in mounted action. And mounted action not only allows you to retain your mobility and thus the so valuable initiative, but its results are more fruitful in success. Hence cavalry is loath to dismount; and engages in dismounted fire action only when forced by conditions to do so.

3. In dismounted fire action cavalry must be as good as infantry, and much of its work will be of this kind. While it is not expected to engage like infantry in the long gruelling advance upon entrenched positions, its functions will often require the capture of some position and holding it until the infantry arrive. The same "nothing can stop us" spirit of the charge must characterize cavalry discipline even in its dismounted advance; for quick results are required in cavalry work, and we must not fail.

4. On the flanks of the main battlefield opportunities will come even to subordinate commanders to deliver telling blows against the enemy. There can then be no waiting for orders. A cavalry leader must welcome responsibility, and grasp his chance instantly. Hesitation now will not only lose the opportunity, but is very likely to be misconstrued by your men and by your superiors.

5. Cavalry leadership then requires peculiar qualities; a quick eye to see a fleeting opportunity, the boldness for an equally quick decision to grasp it, the clearness of mind to form a good plan quickly, the ability to convey that plan to subordinates in short clear orders, the firmness of will to carry through the plan adopted, and all the while that high demeanor of confidence and even joy in the fight that is an inspiration to his followers.

6. Mounted combat requires three things that must be considered in peace training:

a. That the commanding officer be able to control the movements of his command from a distance. He must ride along high ground whence he may study the terrain and watch the enemy, meantime controlling his troops as they move under cover.

b. That the commanding officer be sure of his ability to maneuver at fast gaits in the actual presence of the enemy. He must seek a relative position that will enable him to launch his charge suddenly at an advantageous angle and that will also give best opportunity to the machine guns or artillery for delivering their fire as he charges. This means for subordinate commanders and for the men in ranks that they be able to put up the smartest possible close order drill, keeping the fours together, keeping accurate distance in column and alignment and interval in line formation, keen in catching and obeying commands, in regulating gaits and conforming accurately to the guide. Poor cavalry has to charge straight at the enemy, for its leader has no confidence in its ability to maneuver in such time of stress.

c. That the horses reach the critical point in prime condition for the supreme work. Their energies must, therefore, have been conserved during the work of the approach, by avoiding unnecessary speed in deployments, in messenger and scouting duty, etc. Peace training should instill in the man the habit of conserving his horse's strength. This is characteristic of a good cavalryman riding for pleasure; in the hunting field, wherever he be, he is constantly quieting his mount, restraining his natural impulse to higher speed, unconsciously conserving his energies to meet a supreme test when it comes. It is by having thus cared for their horses, on the march and particularly in the individual work afield, that the men may now ride out upon the battlefield confident in the strength of their horses to overthrow the ranks of the enemy.

7. Added means of aerial reconnaissance and of quick transmission of information, the increased size of modern armies and the great extent of modern battlefields all combine to increase the necessity for mobility in the fighting forces; for quick changes in dispositions will be of vital importance, and they must be made over considerable distances. Here is work for cavalry; and their horses must be fit for severe tests of speed and endurance, and the men ready to dismount and with their rifles fight as skillfully as infantry.

This kind of fighting, however, applies generally to large forces of cavalry taking part in a general battle, and should be the second or third thought for the commander of isolated cavalry. In the latter case, if fire action is desired, it is believed that for trained troops mounted fire action with our deadly Colts will be found of tremendous value to the American cavalry.

8. There is no *normal* attack formation. In general about two-thirds the force is put into the *attacking line,* and one-third in the *reserve.* The attacking line charges with only the force deemed immediately necessary, the other troops following closely in *support,* lending moral support to the charge, and charging as opportunities de-

velop. All troops rally immediately after the charge and return to the fight. That side wins in the end which has the last formed troops in hand for charging; hence the importance of each unit quickly rallying and getting back into the fight.

9. Numberless books of vital interest to all cavalrymen have been written on this subject, but their discussions and precepts beyond inspiring *Cavalry Spirit* which is of value to us all, are mostly for higher commanders. And while it is true that the broader the understanding of our profession, the more intelligently we should play our part therein, yet it is believed that your limited time should first be given exclusively to learning your own troop duties until you are so sure of them that they have become second nature to you. Then take up an academic discussion of higher functions. Half-baked knowledge of the General's duties often makes the subaltern so severe a critic of his superiors that he has little time or energy left for loyal execution of his own proper functions.

10. For your part in the combat of larger units you will have had previous training at drill, and you and your men will be under the eye and direction of your superior officers. You may, therefore, face this with equanimity as easy of accomplishment. What you have got to study and thoroughly prepare for are your manifold duties in connection with the employment of cavalry in its more common rôle, the service of *Security* and *Information*. Here you will often find yourself alone with your men, far from the directing influence of superiors, the whole responsibility yours, and success dependent upon your resourcefulness, judgment and faithful leadership.

11. The prime duty for cavalry in campaign and up to the instant of the actual clash of the armies in battle is to gain information of the enemy and at the same time by screening our forces from observation prevent the enemy's gaining information of us. This work is discussed in the subjects of Cavalry Screens, Contact Squadrons, etc., studies for higher officers, and means for the noncommis-

sioned officers and privates just one of two things—either work under the immediate direction of their officers, or else individual work in patrolling and reconnaissance. Even when on service as advance guard, rear or flank guard, or outposts, your individual duties are still those of reconnaissance.

12. And every private even must be taught as much as may be of the principles of patrolling, since every man is liable to duty as member of a patrol, and through casualties or dispersion it may occur at any time that the stupidest member of the patrol will be left alone to carry on its work—and his ability to do this, and his faithfulness to duty, may alone result in giving our General the very information that will bring success to our cause.

13. Almost any man can make a fair soldier in ranks, surrounded by his fellows, following his leader; but it takes rare courage and a high sense of duty for a man to keep on alone, sole survivor of his patrol, hours away from his command, facing constant unknown dangers, and exhausting the last resource to gain the information his patrol was sent to get. Yet service may demand this of any cavalryman, and you will see the necessarily high standard to which he must attain, the degree of training, loyalty and faithfulness to duty that must be his. This necessity for individual excellence no doubt accounts for the *Cavalry Spirit* that characterizes our Arm, the spirit which inspires the individual to this faithfulness to duty far from observation.

14. *In the service of Information, a peculiar quality must characterize the discipline of Cavalry,* developing individual initiative, responsibility and faithful performance of duties not prescribed by superiors but recognized as such in the individual breast. The Infantry works *en masse,* the Artilleryman always under direction of his officers. They have but to execute orders. They are the *body* of an army, the bone and sinew of its mass and strength. The Cavalry patrols are the *fingers* reaching out, brushing aside, feeling for a good hold in the struggle

to come; flashing back information along the nerve channels to the controlling mind. They work in small groups, often as individual scouts, perhaps a day's march away from their officers, alone with their military consciences. None but God will know whether they have done their best, whether they have dared enough to accomplish their mission. Whether when opportunity offered for them to gain the information, they had the cool courage and resourcefulness to go in and get it, or quietly skulked in safety and let the opportunity pass. The *discipline of Cavalry* must develop such *esprit* as will ensure the individual's giving his uttermost, be he lone private, scouting, or noncommissioned officer leading his patrol.

And that cavalry commander is missing the very elements of his task who fails not alone to give opportunity, but to seek opportunities in administration and drill to develop in his subordinates initiative and a sense of individual responsibility. That Colonel who trains his men all to look to him for decision in all matters must expect disappointment when his troops meet actual conditions in campaign, for he will not then be present to control every situation, and his men, unused to responsibility and initiative, will not act quickly and surely—even worse, often will not act at all. A vital failure in cavalry training!

15. Each arm of the service is training to play its own part on the battlefield, disciplining its men that they may hold true to standard amid that strain and roar and loss of life. And here again *for mounted combat, the discipline of Cavalry has a unique quality* all its own. While others must hold hard, cool and deliberate to launch their projectiles with mathematical precision along trajectories through miles of space, the cavalryman may toss his pipe into the air and unrestrained with gleeful shout launch himself right at the foe. He *rides* along his trajectory, and the whistle of the bullet is the wind in his ears as the line sweeps forward with a yell. Does he stop to calculate! Does he care a hang! It is the spirit of youth—reckless, daring, unconquerable youth that will not be denied! That is a Cavalry charge, that the fruition of the *Cavalry Spirit* we are fostering.

The enemy appears, the fleeting opportunity offers; it's away with restraint, down close into our saddles with a leghold of our horses, and away with a joyous rush to batter him down. It is the sport of kings, the joy of knights of old. He who has never ridden a splendid horse in full cry across country has no conception of the feeling of elation, of irresistibleness, of wondering "what can stop us," that fills the breast.

No bloodless man can hope to lead on the field of Cavalry Combat, no weigher of pros and cons who can't decide, no gentle soul who cannot joy in actual encounter; years he may have, but they must not have aged his youthful heart and ardor.

"Cunning he must have for the approach, nerve, and unflinching resolution; then reckless and bloody-minded intrepidity; and withal the power to inspire his men, even the weak-hearted, with the certainty of success and the joy of battle. Though they know some cannot come back, still they like to be deceived, to die or to be maimed, fierce, highhearted, and elated."—*Remington.*

"And then we reformed and went at them once more,
And ere they had rightly closed up the old track,
We broke through the lane we had opened before,
And as we went forward e'en so we came back."
—*Lindsay Gordon.*

If your heart does not respond to the swing of this Cavalry spirit, stop now, and transfer your services to that arm for which you are qualified. All are equally honorable. And one who may be unsuited to the dash of Cavalry may be peculiarly fitted for the cool, determined work in other arms.

For Cavalry must have *Spirit, Spirit* and all the time *Spirit*. And that group of Cavalrymen who have worked together and have not yet their own songs and forms of celebration, have missed expression for the joy that is in them, and their leaders have failed to take full advantage of the opportunities for development.

16. **Organization.**—The war strength of a cavalry troop is fixed at 3 officers and 100 enlisted men. Of these, the officers and 86 men are for duty with the troop; while 14 enlisted (1 sergeant, 1 corporal, 1 wagoner and 11 privates) are for detail to the various service detachments. The fighting troop organized is then: 1 first sergeant, 1 quartermaster sergeant, 5 sergeants, 7 corporals, 2 cooks, 1 farrier, 1 horseshoer, 1 saddler, no wagoner, 2 trumpeters and 65 privates. These are organized into three platoons of two permanent squads each.

17. In the troop the first sergeant and quartermaster sergeant are made and unmade by the troop commander. In the regular service the quartermaster sergeant takes rank according to the date of his warrant as sergeant; and is available for line sergeant duty at drill.

18. The stable sergeant, named also by the troop commander, is generally made squad leader of the "stable crew," consisting of the horseshoer, farrier, saddler, and generally at least one other private detailed as stable orderly, or as wagoner, or both. This stable crew in the field is exempt from guard duty, camps on the left of the line and takes charge of the picket line. Having these men always on this duty ensures carrying out intelligently and surely the instructions of the veterinary for the care of the horses, sick or injured.

19. The well-equipped troop will have more than two men trained as cooks, so that a substitute is available in case of emergency. To have these and have them really capable is one of the most important functions of the troop commander.

20. The trumpeters should always be particularly well mounted, and custom seems to prescribe that they be light, alert, and good horsemen; and especially neat in appearance, for theirs is a conspicuous duty. A trumpeter should always accompany an officer, mounted. A snappy, highly military performance of his duty as orderly reflects credit on the standard of the troop. One is assigned per-

manently to the captain, the other to the two lieutenants, for orderly duty.

21. The troop, made up of well trained squad teams, is the fighting machine with whose efficiency you are particularly concerned. The colonel of the regiment wants twelve troops trained to his standard of efficiency; and three majors able to fight them to fullest advantage. This makes the school of the troop the practical limit of the field for personal training. Beyond this the majors must have opportunity to learn to handle the troops skillfully in battle exercises, both mounted and dismounted; alone, and in conjunction with the fire action of machine guns or horse artillery. And troop commanders must know the principles and mechanism of these squadron maneuvers, not alone to handle their troops intelligently, but to be able to take command when occasion demands.

The fast mounted squadron drill in close order gives the mechanism and training for maneuvering in the presence of the enemy preparatory to delivering the charge in mounted combat. The chapter on "extended order" explains the mechanism and training for the charge, and for the dismounted fire fight. If you acquire proficiency in both these at the home station you will have gone far; and will be ready to participate in battle exercises at maneuvers.

22. Cavalry Drill.—Our cavalry service has been undergoing a process of evolution which demands a new drill manual. A Board is preparing this now, and it should be available in a few months. It would be impracticable to anticipate any of its details, and our discussion of cavalry training will include only those basic propositions which must be true in any system of training.

When the Drill Manual is available, take it as your infallible guide. The great trouble with most military students is their inclination to ignore the drill manual of their arm, and to seek information elsewhere. In reality these manuals are the boiled down thought and experience of generations, and nothing can equal their excellence.

The Infantry Manual is the best book in the English language to-day on the business of soldiering, and if infantrymen would but concentrate their attention on properly *learning it,* there would be little left to be desired The same will be true for the cavalry manual when completed.

Two facts characterize the study of drill manuals, doubtless due to the concentrated essence of their contents. First, you may, and should, go over the same subject many different times, and yet you are sure always to pick up some new point that you have missed before; and second, there is no known soporific, so sure to induce sleep, as study of a drill manual.

I recommend that you make it a practice to mark with a pencil those paragraphs and explanations most important to your work, to help your eye to catch these things when you are refreshing your mind preparatory to taking a drill.

23. All cavalry drill must be characterized by *elasticity,* and *swinging through,* either mounted or dismounted. This is essential to the development of our peculiar discipline, and we have to watch that stiffness be not introduced at drill, which would defeat it. For example, a fundamental principle of marching in line is, that each individual shall march straight to the front, uniformly, at the same rate as the guide; and that he shall make his corrections for alignment or interval *very gradually.* This gives the desired elasticity and freedom of movement. Observe its corollary; telling a man at drill to correct interval or alignment, you must be careful to do it in a tone that will not make him jump, and thus do it abruptly.

And in the same spirit we forbid the men in ranks to correct interval after halting in line. No passaging is then allowed. If it is desired to make the intervals quite correct, special instructions are given, and the necessary time taken for these corrections.

24. Armament.—The cavalryman is armed with the rifle, saber, and Colt Automatic 45-caliber pistol. The rifle is his weapon for dismounted use. It is the same as that used by the infantry, except that it carries no bayonet, and the cavalry *must* be expert in its use and care.

25. But the characteristic arm is the saber, ever in evidence at ceremonies, carried by the Cavalry private as well as by officers of all arms. It should be his pride to carry it smartly, to use it in the manual with snap and precision. But none of your limited time can well be given to trying to learn the *saber exercises*. It is impossible without giving additional time for you to become skilled with the sword—an unnatural weapon in the hands of an American. Enough that you learn the one offensive movement, to thrust with the point, and never even hear of the possibility of cutting. It is well known that real damage to the enemy results from the use of the point only. Our own book prescribes it, yet the American soldier invariably swings his saber in an effort to cut, and with about the finesse of handling a huge cheese-knife.

26. *The pistol* is the natural weapon of the American. From boyhood up he is familiar with its use, and naturally believes in its efficiency. The cavalryman should be so trained as to develop and take full advantage of this national characteristic, and be given a handiness with this weapon that will add materially to his effectiveness in service. Give him opportunity to point and snap the pistol when riding at drill, and encourage him to do it at will while at *route order* on the march. This will train his hand to the necessary control.

In your early training of the men in pistol firing, make it the first consideration that the man instantly return to the position *raise pistol* or *lower pistol* upon firing his piece. Make him concentrate his control on this, rather than on hitting the target, until it becomes a fixed habit. He can then give his attention to shooting accurately, and the safety of his fellows, his horse, and himself will be conserved; this is important. Make him appreciate that the facility with which a careless trooper Roman-candles his pistol about, makes his danger zone become a danger sphere, of which he is the centre and everywhere is the circumference.

CLOSE ORDER DRILLS

27. **School of the Trooper.**—A "trooper" is a cavalryman on his horse. And this school consists largely in horsemanship, so essential to being a good cavalryman. To emphasize its importance, and to place it conveniently for others who may be interested in its study, horsemanship has been treated in a subject by itself. Most of this school can be actually self taught, the use of arms, as well as of the horse.

28. Mounted exercises are even more important than the corresponding setting up exercises of the foot soldier, Suppleness of the rider's body is an essential for a good seat. These exercises not only give that, they inspire confidence, and assist in gentling the horse. They should be given from time to time throughout the training period.

29. Every cavalryman certainly should be able to leap into his saddle from the ground, the horse in motion. You are cautioned against the possibility of wasting time attempting to teach a man to leap on his horse when he perhaps has not the ability to vault a three-foot fence. When you find men unable to mount freely, try them on a wooden horse or rail; you can save much time by requiring the men to learn the knack of jumping outside of the drill hour.

30. The fundamental rule for all mounted drill, and one that must be pounded into the soldier until it becomes second nature to him, is this: *with the one exception of wheeling by fours, every time a mounted man changes direction he moves his horse on the circumference of a circle whose radius is at least two yards, and without changing the horse's gait, unless to increase it.* The trooper "*swings*" around this circle without ever slackening his gait, and he must get this idea of "swinging." That will give the drill the swing which should characterize it.

31. The best preliminary drill formation for training all the men simultaneously not only in how to observe the above rule, but in *horsemanship, guiding, regulating,* and

in many things that make for good drills later, is **Front take distances, MARCH.** At the command **march,** given when in line, all Nos. 1 move straight to the front, keeping their interval of three yards and regulating to the right. When this rank of Nos. 1 has gained four feet distances, Nos. 2 similarly move out, keeping directly in rear of their former positions beside Nos. 1, and four feet from head to croup regulating to the right. In the same way Nos. 3 follow Nos. 2; and Nos. 4 follow Nos. 3. No. 1 on the right of the leading rank is the guide for all.

If this formation be marched by the right flank, each rank becomes a column of troopers, four feet from head to croup, the same No. 1 the guide, the leading troopers of the other columns keeping their interval from the left, and each, one yard less advanced than the leader on his left. If the original formation be marched by the left flank, they are again in column of troopers, No. 1 leading the right column is the guide, and each of the other leaders regulating to the right is one yard more advanced than the one on his right. If the original formation be marched to the rear, by the command "**troopers right (or left) about,**" the No. 4 who was on the right and is now on the left of his rank becomes the guide of the formation.

You can see that maintaining this formation during the various movements possible requires constant individual attention and no small degree of horsemanship on the part of each trooper, who must keep himself accurately in place alone by himself. He also learns here to think of his comrades, and in time comes subconsciously to consider them in playing his part in all work.

Go very slowly at first, and assure yourself that all the men understand how to guide and regulate when marching in each of the four directions. Later you may work at the fast gaits. It is the most helpful exercise for getting into the heads of the soldiers this idea of swinging on a two yards radius. Give them a few minutes smart drill in marching by the flank and in the abouts, insisting that they keep up a uniform gait in every change of direction and that they watch the ground in the turns to see that they are actually moving on a circle of two yards radius. By frequently using the word "swing," in this exercise you help them to get the idea. Tell them that in moving thus on these circles, they are moving exactly as they should when in ranks at close order they execute obliques, turns, etc.

It is an excellent exercise in horsemanship to take this formation out-of-doors, and then require the troop to follow in trace at various gaits and in varied ground.

32. School of the Squad. Mounted.—Here is taught practically everything of drill that the private trooper need know. *But he must know this absolutely.* The more advanced drills are studies for the officers and noncommissioned officers. It is not the difficulty of teaching these movements, even in their perfection, that causes most ragged drills—it is the instructor's failure in subsequent drills to keep the men's interest and attention to a pitch necessary for their accurate performance of the wheels, turns, obliques, etc. A good drill master needs be a psychologist, by nature or by acquisition, so to handle the men and the work as to keep the men interested and alert.

It is valuable in this drill to change numbers from time to time, and thus give everyone the practice in each position in the four. A simple formation for this from line is to run the odd numbers four yards to the front, and *form rank right oblique,* and then count fours.

33. The principle of controlling the movements of your men by "leading" has met with general favor. It is an important phase of leadership, and both you and your men should have much practice in it. No verbal commands whatever are given, the men must be controlled absolutely by visual signals; and in time you should reach a degree of mutual understanding that will enable you to control your men from a considerable distance. Changes of direction must be made gradually, that is on a sufficiently long radius, so that the solid front of the squad may be held intact during the change. If an abrupt change of direction is desired the signal for a *turn* or a *half turn* should be given.

34. **School of the Troop.**—Here the captain deals directly with all his men, working for a uniform standard of efficiency. He co-ordinates the work of his chiefs of platoons and squad leaders; and, as it works out practically, he actually gives much individual instruction to the men themselves. It is intended that each troop shall reflect the troop leadership of its captain. To accomplish this it is necessary that he bring and keep his lieutenants and noncommissioned officers into close touch with his intentions, methods of administration and instruction, and his aspirations for his troop—in this way only can their interest be developed, and their energies loyally and faithfully bent to the captain's assistance.

35. In determining the question of gaits you must be controlled by a consideration of the object of the drill; whether a training in discipline requiring precision and accuracy primarily, or a drill in the mechanism of maneuver in the presence of the enemy requiring quick, sure control by the leader, or a fast dashing drill to arouse the spirits of the men.

36. As to the question of the chiefs of platoons repeating the commands of the captain at drill: where a chief of platoon does repeat the commands of the captain, he must pitch his voice in a tone of *caution* not of command. When the chief is giving commands to his own platoon, which he must do in successive movements, let him pitch his voice in a tone of *command*. In any case, he is responsible that his platoon execute each movement correctly, and should give *cautions* or *commands* as required.

37. Where conditions of the service result in the continual loss of men from the organization and they are being replaced by recruits from time to time, it is generally found impracticable both to keep the troop organization in permanent squads, and at the same time to keep the troop sized according to height. It is believed to be much more important that the organization of permanent squads

be maintained, the men remaining in their squad, rather than being continually shifted to accommodate the matter of sizing.

38. In forming the troop, it is not actually necessary that the noncommissioned officer *call the roll* of his squad, he can easily check up mentally the presence of all the members of his squad while awaiting the command, **Fall in;** he is then ready to report immediately after the command. Whenever practicable in work about camp or garrison the troop should be marched without *counting fours;* the permanent organization by squads should give a unit which can be used in commanding **squads left turn, etc.,** in marching to stables, to mess and so forth.

39. **School of the Squadron.**—The main practical value of this school is to teach, and to train both the major and the troops in the mechanism for a quick-sure control of the troops by the major; so he may have the necessary confidence to maneuver them in the presence of the enemy in mounted combat, feeling that he can maneuver at speed without loss of control and cohesion, ready and able to launch his troops in the charge in any desired direction and at any instant. This means keen work for the officers, and for the men the smartest troop drill possible.

A smart squadron drill is more interesting to the officers than troop drill, and may easily be made so for the men. The major will take advantage of this drill to maintain uniformity of instruction and execution throughout his command, and also to make evident to all which of his troops are the most efficient and accurate in drill. This latter should be a great stimulus to interest for members of the troop.

Even when a troop is stationed alone the captain may well divide it at times into two, and thus, by aid of a little imagination, hold a squadron drill that will give him some appreciation of the major's commands, and his officers and sergeants an opportunity to exercise command in the next higher grade.

There appear to be no difficulties in this school demanding particular attention. For the officers drill means keeping the troops smartly in hand, observing accurately the matters of alignment, interval, direction for the base unit, and above all *uniformity of gait* as the responsibility therefor shifts from one platoon chief to another. Captains will need be particularly careful about being always in the right position with reference to their troops, since long experience as troop instructors has given them the habit of riding where they please, and this will spoil the precision of a squadron drill. For noncommissioned officers it means studying the duties of the guidon and of the guides. Otherwise both men and chiefs of platoons have but to carry out accurately an application of troop drill.

40. Ceremonies.—The employment of these is so rare that it is impracticable to learn them with the idea of keeping them in mind. The safer rule, in fact the rule generally observed in the regular service, is to look it up in the book just before going out for any given ceremony.

There is, however, one thing always to be remembered. A ceremony is not the place for drill corrections, and everyone from privates up should conspire to make the movements quiet, smooth and dignified, slurring over mistakes and making them as inconspicuous as possible. The men must exercise the greatest self-control to ensure absolute steadiness in ranks.

Extended Order Drill and Battle Exercises

41. School of the Squad.—In this school are found the principles and movements by which the squad leader trains both himself and his men into the squad team, so they may participate as such in the battle exercises of the troop. Here the noncommissioned officer first finds himself a responsible member of the troop team, whose efficiency as a fighting machine will depend on the excellence of these component elements the squad teams.

This drill is fundamental in cavalry training, and most interesting to the men, who find themselves practicing the plays that they are actually to use on the battlefield. It is distinctly an outdoor drill, and man and horse must be so thoroughly trained in this work that they can perform these rapid movements without undue excitement and under perfect control.

When a few men may get together out in the country, for an early evening or Sunday morning, an ingenious leader may give them an hour's work in these exercises that will be tremendously interesting. If a beginner himself, he should first look over the available ground and plan out the exercises which may be adapted to it. In this way, if a troop had but a dozen horses available, in a short time all its members could have received much practical experience in this important training.

42. In drilling the *Charge* in close order, give your first attention to "cohesion;" the other conditions, rapidity, surprise, impetuosity, and vigor may be easily acquired later on. Remember that the prime requisite that you are training for is the ability to deliver the blow of the charge with a solid mass eight feet high and as wide as the front of your squad the men riding boot to boot.

Observe carefully the *cautions* given for obtaining success in the charge. Note particularly that it is recognized that this class of drill gets the men and horses more or less out of hand, and that you are therefore required to follow this drill invariably by a few movements in close order executed with great precision.

In reconnaissance work small bodies, perhaps in patrol formation, will be called upon to charge at a moment's notice. Squad leaders should drill in forming for and delivering the charge without premeditation from both march and patrol formation.

43. Do not assume that the *rally* after the dispersion due to the shock is always made "to the rear." It is made in whatever direction the leader finds the most advantageous line on which he may pull out and quickly rally into a small rank with which he may enter the combat again. It will often happen in combat that the charge will

carry through and the rally be made beyond the point of contact and in practically the same direction as the charge. The important thing for both leader and men is to get the habit of rallying quickly and surely on the leader, and being ready for further combat with a minimum of delay and confusion.

44. The *Extended order* exercises are for training your squad so you may handle it successfully on the battlefield, either mounted or dismounted. This work really has to be done out of doors, and even then you will have to use a lot of imagination to provide situations which seem to force you to use the squad exactly so.

45. In every deployment out of doors the leader should "indicate the direction" by telling the base trooper to march on some *specified* objective as the "corner of those woods," "that white house," etc., and this objective may well be somewhat off the perpendicular to the original front, to train the men in properly guiding on the base. As training progresses far enough, men should be sent to represent the enemy and instructed to move as the enemy would, so the squad may be trained in directing itself on a moving object. This is an excellent exercise "in leading" mounted, preparatory to delivering a charge in close order.

46. When instructing recruits in the deployment as skirmishers, it is advantageous to use first the simpler deployment from a flank, rather than from the centre. Also to make the first deployment with the troopers moving at a walk, explaining that this is for the purpose of letting them see how the movement is going to look and what line each will have to march on. Then make the same deployment with the troopers moving at a trot. The men should now have acquired a conception of what they are to do, and be told that they are now ready to deploy in the manner in which the deployment will always be made hereafter, the base at a trot and the others at a gallop. Caution the men to give all their attention to controlling their horses and putting them exactly where they should be in the line; that the men near the base are going to get their interval in about two jumps of the horse and must be alert not to go too far; and that at the command **March** all of the troopers except the base execute **Oblique, gallop, march.** It will be very helpful at first to make your deployment with the line advancing at a trot.

47. Every noncommissioned officer should realize that in the fire fight on the battlefield, no matter if the order come from the highest general, its ultimate execution will be carried out through the squad leaders. This is a grave responsibility. In this school he trains himself and his team so they can be trusted to meet it.

Whenever the squad moves the squad leader actually leads it. Even when the platoon or troop is deployed as skirmishers the squad leaders get in front of their squads and lead them whenever a movement is ordered, returning to the rank only when halted.

The men take all instructions and directions from their squad leaders, who look to the chiefs of platoons for signals, or direct to the troop commander, and repeat them to the men.

When firings are ordered, the squad leader goes in rear of his squad and directs and controls its fire. The normal squad is twelve men, half of a platoon. It is better to have eleven rifles in the line under proper control, than twelve not controlled. While the chief of platoon may control twenty-four rifles in the line in the drill hall or on the plain, he will find such control impossible in rough ground which is unknown to himself and his men. You have but to attempt this to prove it to your own satisfaction, and our training must provide for perfect control in just such conditions. If the later developments of the battle bring conditions where the platoon chief can control all the rifles alone, it is simple to put the squad leaders on the line. But if the conditions require the assistance of squad leaders for control, it is not so easy to take them from the line and expect them to control their squads unless they have been trained to do it. I have watched squad leaders try to put their squads into firing positions in unknown varied ground, and the best of them are inclined to use their hands to place the individual men. It takes much experience in varied conditions to establish that mutual understanding which enables the squad leader to put his team just where he wants it, and to deliver the desired fire just as he wants that. And it would be quite impossible for a chief of platoon dealing directly with the individuals of two squads.

48. To illustrate how the squad leader would advance his squad from one firing position to another. When ordered to advance, he would command **cease firing**; as soon as pieces were locked he would spring forward through his firing line, calling out **follow me.** The men would leap up and follow the leader, keeping their intervals in a general alignment about two yards in rear of him; when the leader reached a point about two yards in rear of the new firing position he would drop, calling out the preliminary command for firing, generally **fire at will;** the men would pass the leader, drop quickly into their individual firing positions on a general alignment about two yards in front of him, and get ready to fire, the rifle in the position **load.** The leader now calls the range, and when sights are adjusted, designates the objective and orders the fire.

The greatest need for training in rough country, is to teach the men *to get their individual firing positions quickly* and properly, at the preliminary command for firing, for while getting the best available cover that enables them to see the objective, they must still remember their comrades, and observe reasonable intervals and a general alignment to avoid injuring each other.

Actual experience is necessary for this, and actual experience shows that it is advisable if possible to indicate the objective before actually going into the firing position, in order that the men may take their positions intelligently. To illustrate this, take the troop along a draw and dismount it to fight on foot under cover of a slight ridge or fold; direct a squad leader to put his squad on the ridge and fire at a certain objective now out of sight. He may well lead them up the slope in *close order* till they can just see the objective over the crest (hats come off before they reach this point), where he halts them, and points out the objective; he then prescribes the interval, deploys them creeping, advances them to near the military crest and gives the preliminary command for firing, when each seeks his own firing position. This assumes time and deliberation. Other conditions make the objective unmistakable, the enemy may be firing; or you may need greater haste and may have to deploy at once and lead your line directly to the firing position, trusting to quick estimates of the situation, and quick decisions and commands.

49. Dismounting to Fight on Foot.—This is an important rôle for cavalry, a development of its use which sprang from the practical common sense of our cavalry leaders of the Civil War. Different methods may be used for getting a certain proportion of the rifles in the firing line, the remaining men caring for the horses. Normally one man out of each four remains, and they are able to maneuver the led horses, keeping them under the best available cover, and bringing them to the desired point when required. Or it may be that every second man only will be dismounted, or again that all will be dismounted, leaving the horses immobilized.

It is necessary to bear in mind the object to be attained, which will determine the method and manner of going into the fight. While in the normal case, the three men of each four should assist each other in linking the led horses, all going out to the line together, thus getting all the rifles on the line in the least time and with the best control, it might be of greater value to get even a few rifles in action, when it would be found advantageous to signal the action at once and have the men rush to the firing line individually each as soon as he can. This would be done only in an emergency, when the mounted command had been unexpectedly brought under a close-range fire, where physical conditions made an immediate fire fight the only possible line of action. In this case ordinary fire control is out of the question. The men will know the range (battle sight) and objective without indication. Excitement and confusion will prevail in the best disciplined troops. They do not need to be trained in it, as so many are. In reality they do need this training: to dismount quickly but quietly; and to form quickly, watching for signals, each squad leader leading his squad quietly into the formation or position ordered, keeping his men cool and in hand, ready to open at command an accurate well directed fire at the designated object. This takes much practice. The troop commander should if possible select some natural cover behind which to dismount his troop, and then see that his men are properly led into position on the high ground. On the actual battlefield, dismounting to fight on foot will generally call for this kind of work. The speed of the horses brings us within striking distance, there we leave them under cover, and quietly form our dismounted line for the fire fight. Absolute discipline and control are necessary, and we would have lost them for that fight if the men had rushed pell-mell into the firing line. All our training in this important cavalry function should be along these lines. If you wish to show the troop what it is like to get down and open fire in the excitement of an emergency, arrange to have a few men open on you with blanks at a suitable place unknown to your men, and then rush them into a firing position. You will not need much drill at this.

Whatever mechanism is used in dismounting to fight on foot, the great consideration at drill is to train the troop to work promptly but *without excitement,* to get into the firing line without loss of control or organization as a fighting machine. Platoon chiefs must be quick in sizing up the situation, squad leaders looking to them for directions.

50. Too often in actual service led horses have been stampeded or captured because the commanding officer

failed to leave the proper guard with them. He had better in peace time training acquire the habit of leaving the proper guard with his led horses and sending out proper vedettes in observation. What these should be will be determined by the conditions of the fight and of the terrain.

51. The captain decides whether or not the led horses will be assembled, and instructs the guidon sergeant accordingly. So, upon starting to the rear with the led horses, every man must be taught to look at once to the guidon for a signal as to whether they shall assemble or seek individual cover. If assemble is signaled, all proceed toward the point indicated by the guidon sergeant.

52. The led horses should be kept in normal order, and faced in the most advantageous direction according to conditions. As the men approach to mount, horseholders recognizing individuals of their fours may often expedite matters by calling them by name and indicating their horses. Rifles are returned to the boot at once, so both hands may be used for control in unlinking. You gain in speed by not exciting the horses. Straighten out at the command for marching.

53. For preliminary instruction in working dismounted men, it is a good suggestion to have the troop **count threes,** which will more truly represent conditions as they are after dismounting to fight on foot.

Every opportunity to drill in the open should be taken advantage of to teach the men this nature of work in varied ground. It is better to instruct your men always to take such position upon halting as will give them best cover and yet enable them to see to fire at the enemy; rather than to instruct them to take a designated position; for example, to lie down upon halting, even when it makes it impracticable for them to see to fire. At any given halt some men may be lying down, some kneeling or sitting and some standing, each having taken the best advantage of his ground to enable him to see to fire accurately, while still covered as much as possible.

54. Remember that training in the advance by rushes or by creeping should be conducted in this school with a view to teaching the men how to use the accidents of the ground to best advantage, and particularly to training the leader and his men in working together through varied ground constantly controlled by the will of the leader expressed by signals. They must advance when and where the leader wishes, halt when and where he wishes, fire when and how he wishes. Let the enemy be represented and firing blank ammunition, and enough excitement will prevail to render this so realistic as to afford difficult conditions for leadership and real training for all.

55. The definition of fire discipline recognizes the psychological fact that peace training is for the purpose of inculcating a *Habit* that is going to make control of the men on the battlefield possible. Train your men to execute **cease firing** at the *whistle signal.* Impress upon all the heinousness of opening fire without command. Many a beautifully worked out plan has been betrayed just before fruition, by some excitable soul who had to let go because he saw one of the enemy. Designate a real objective, teach the men the habit of always listening for it, of picking it up correctly, and thereafter aiming at it steadily.

56. **Battle Exercises, the Troop Mounted.**—These prescribe the training for handling the troop in mounted combat. This drill means bold riding for men and officers, and close attention to the details of close order drill to assure the delivery of the charge in good order. It is altogether an out-door drill, and may not be even simulated in the riding hall. It should be made as realistic as possible, letting the men know in each case against what assumed enemy they are charging. In charging again after the rally, it is enough to call out " there they come through that hole in the fence," and lead at them.

This is the same class of field work for the troop as discussed for the squad, and the same remarks as to its importance obtain. Particularly in the case of troop drill, the captain should invariably set forth an assumed situation, in which the enemy is of course preferably represented, before he gives the command **Form for attack.** In this way only can the men of the troop have any intelligent conception of what they are trying to do. Only a wholesome amount of imagination is necessary to assume these situations, and an application to this class of drill of a reasonable amount of forethought and preparation on the part of the captain will be more than repaid by the enthusiastic interest of his men. This drill more than any other will satisfy the sentiments that made the men join the Cavalry.

57. **Combat Patrols.**—Think of these patrols as in observation *during combat.* The great difficulty with peace training is that these patrols almost never go out a sufficient distance to give timely warning. Acquire the habit of using them intelligently whenever you engage the enemy, mounted or dismounted. And equally important, even where you are familiar with the ground, always have your ground scouts in front of you; and take occasion to use them in situations where they will have actual conditions to report, which will require responsive action on your part. You will not only train them, but impress upon all the importance of their function.

58. In the attack formation the captain would ride out with or in advance of the attacking line to observe the enemy. When he deemed the time most opportune he would indicate the exact objective for the charge of the attacking line, and launch it, by directing **To the charge.** This command is equivalent to saying to the lieutenant—I now turn it over to you, attack that group (indicating)—and is in no sense a command to be yelled with excitement. And the lieutenant should now proceed with studied calmness, for his men must draw sabre with sabre knots adjusted, nor excite their horses so as to render impossible the advance with perfect cohesion. It is a real test of leadership, the conduct of a charge. You must watch the men and horses behind you, holding them steadily in line,

and, as you approach the enemy, *gradually* increase the speed, until at the moment of shock your solid line is sweeping forward at the limit of speed for your slower horses.

59. Occasionally include the practice of the dispersion, representing the melee of actual conditions, lasting about two minutes; and always practice a prompt withdrawal from the scene at high speed into the *rally* in line, and the return to the field by *troop leading* ready to deliver a second charge if necessary. The troop acting alone, the captain may rarely lead a charge, certainly not until the final one. He is on the field, detached, where he may direct the launching of his platoons.

60. **Extended Order, Troop.**—In this school the captain learns how to handle the teams that make up his command, and trains his team leaders (platoon chiefs and squad leaders) to execute his will in all the various conditions that may arise in campaign and battle. It is essentially an out door drill, demanding imagination and resource on the part of the instructor. The mechanism of the movements may, however, be learned in the drill hall, though all realism is sacrificed. This drill is mostly for officers and noncommissioned officers, and the squads should come to it well trained as teams, both leaders and men.

61. **The Squadron.**—While we no longer drill the squadron in extended order, squadron battle exercises are of the utmost importance. Modern battle conditions make the squadron appear like a squad team and require that the Major handle it as cleverly and surely. Our present Regulations were written just at the close of our long experience in Indian fighting, when the "troop acting alone" was most important. And it is fortunate that this school is elaborated upon, for in it is found the fundamental training of armies—the making of good troop teams. These teams are fought by the majors through *directions* given to the captains rather than by commands. In fact it is only in the maneuver preceding the mounted

combat that the major actually gives commands. For most of you, training in squadron exercises can be had only at maneuver camps. Let it be your one object to take to those camps a well trained and disciplined team, which may appear in these larger affairs with credit to you and satisfaction to your squadron commander.

And my final word, for the squad leader as well as the troop commander, is that in this training you *avoid excitement.* If you could see even well trained troops rushing wild eyed about the maneuver field, cohesion and control gone to the winds, you would appreciate the joy you could bring to your commanding officers by keeping cool and collected, with your men under quiet control. More than one umpire at maneuvers has been known to say: "If I could see one organization advance in the attack using the mechanism with control, I could die happy." And this only in the presence of blank ammunition! Would it not be worth while to train with this especially in view, and at the next maneuver exhibit such perfect control as to bring about this desired consummation.

62. Cavalry Raids.—These are unusual operations of cavalry. They would mean for the men engaged only quick, arduous, daring work under their leaders, while they themselves bent every energy to the care of their horses, and the conservation of their powers of endurance.

63. The Fire Fight.—Our ability to fight on foot has been the crowning achievement of the American cavalry, and is recognized as a very important rôle. To live up to our traditions the American cavalry discipline must admit, when conditions demand, our getting down from our horses and putting up as good a fire fight as the infantry. We do not expect to be able to undergo the long gruelling strain that the infantry is capable of—it takes a special training to reach that peculiar kind of discipline. We should not be called upon for that kind of fighting. Our fire fights will be of the short fierce kind; seizing a position and holding it till the infantry comes up, smashing in an unexpected attack on a flank, fighting a fierce delaying action in the rear guard, etc., and into this class of fire fight we will take the same type of discipline, the " nothing can stop us " discipline, that we use when mounted. And this is the reason that our dismounted drills must be held with elastic lines, plenty of interval, so that marching, even dismounted, we may still *swing along* with that air of devil-may-care freedom and carrying-through at any cost.

Yet all this freedom covers a nicety and perfection of control, through our system of leadership and command passing from the highest through each grade down to the squad leader and his responsive team. To secure this in the fire fight on the battlefield, the mechanism of control must be thoroughly understood and drilled into a habit. This is set forth more ably in the present Infantry Drill Regulations than in any other book extant. Cavalry officers may well study it therein, especially until our own manual prescribes one for us. In the meantime, to enable you to prosecute this most important training, and to give you a mental picture of a troop engaged in an infantry attack, I will describe it in considerable detail.

64. The *direction* of the troop in the fight rests with the captain, who assigns the target, may indicate the kind of fire, even the range, and directs when the fire shall be opened, and when it shall cease. The actual *control* of the fire rests with the platoon chiefs and squad leaders, who normally give the actual commands that are obeyed by the men in the firing line.

To illustrate this, assume that the entire troop is deployed in skirmish or firing line with one yard interval, and is advancing upon a slight eminence that will offer a firing position.

The captain has made his reconnaissance, and plans to open fire at this point. The troop may be actually marching, or halted in rear of the position, it may even be halted under cover at the position. The captain decides that the conditions warrant control by platoon chiefs, that he had best designate the range and objective himself and that he will deliver fire *at will*. His commands are: **Fire by**

platoons at will, at 800 yards, at the enemy behind the first fence directly in front of the white house in our right front, commence firing. If time admitted he would best assemble his platoon chiefs, point out the particular portions of the target for each, describe what he wanted and then command: **Fire by platoons, at will, commence firing.**

65. Upon receipt of these commands the platoon chiefs would *lead* their platoons forward as described for the squad, and when within about two yards of the firing position command **Fire at will;** when the men would seek their individual positions and fire would be inaugurated as described in the school of the squad. Had the troop been lying under cover at the position itself, the advance would be omitted, the first command of the platoon chiefs being **Fire at will,** when the men would take their individual positions as before.

Each platoon chief now conducts the fire independently of the others except as explained below for covering advances and the approach of reinforcements.

Had the captain decided that conditions required the control of the squad leaders, he would have commanded **Fire by squads,** and the squad leaders would have done as described for the platoon chiefs, the latter assisting as might be necessary in carrying out the captain's orders.

The captain may desire that certain groups only shall fire, and may then command **2d and 3d platoons (or squads), Fire by platoon (or squad)** and then proceed as above.

In the same way he may designate certain groups only, or all, to cease firing, to speed up or slacken fire. He may change the target for one group, or all, may change the kind of fire, or may give a different range to different groups. But in general he gives all possible discretion to his subordinates on the line itself.

Even if the captain directed fire by platoon, and a platoon chief found that conditions made squad control better, the platoon chief would properly fire by squad.

And conversely the platoon chief could order the squad leaders into the firing line at any time when conditions demanded the additional rifles, and justified his attempting sole control without assistance. Observe that normally, even in fire by platoon, the squad leaders are in rear assisting in the fire control of their own squads.

If, as might rarely happen, the captain had reason to control personally the firings of his whole troop, he would simply omit the preparatory command **Fire by platoon** (or squad), and give the desired commands as does the squad leader in the school of the squad.

These observations cover the delivery of fire at any given position.

56. The following considerations govern the advance in the attack. You will have only the ammunition you carry with you, and that brought up by reinforcements, a limited supply compared with your enemy's in his defensive position. This requires that you conserve it, you may not fire at the long ineffective ranges, but must approach as near as possible without firing, until losses become so serious that further advance is unreasonable. During this advance to the first firing position you will take that formation best suited to conditions. Thin lines afford the least target to long range rifle fire; lines of squads in columns of files with over 30 yards intervals the least target for artillery fire. No formation may be prescribed ahead of time, it is up to the ingenuity of the commanding officer. Conditions may forbid that loss of immediate control attendant upon the use of thin lines. Avoidance of losses may not be the sole consideration; loss in time, loss of control, may be more disastrous. The steady advance without firing should have an inspiring effect on your own morale, and a depressing effect on that of the enemy, who sees you keep coming in spite of all his firing.

The first halt to open fire must be made before the men's endurance has been strained to the breaking point, else they open fire of their own will without command.

fire discipline is gone, and it will be all but impossible to regain it in this fight. In the general case, reasonably well disciplined troops can be brought up to within about 800 yards before opening fire.

67. Having been halted here by the severity of the enemy's fire, it is assumed that we may not advance further without getting "fire superiority." Fire superiority is the fundamental consideration for the success of the infantry attack across the open. It means that all parts of the enemy's position are subjected to so telling a fire that his men do not dare expose themselves to aim accurately enough to do us serious damage. How do we know when we have gained it? When he no longer gets hits in our line—when his bullets are seen to go wild, and our losses become inconsiderable again. To gain this superiority is the problem. He has more ammunition per rifle than we, as many rifles per yard of front, and presumably as good a man behind each rifle. Yet we must shoot him down. This is done by bringing more rifles to bear than he can, by prolonging our front beyond his, giving us a converging fire; by employing "fire of position" from troops advantageously posted and not engaged in the assault; by opportune machine gun fire; by the covering fire of our artillery firing upon his trenches as we make our advances; and above all by such fire discipline and control in our own line as to make our fire most effective.

68. These points are brought out to make you appreciate what is necessary in your training, and what to expect on the battlefield. The commanding officer directs the artillery fire, but you hear the shrapnel screeching just over your head, and it is well that you understand that it is going to burst in the enemy's trenches in front of you, reducing his fighting power against you. Then instead of shrinking with dread as you hear it, you may cheerfully wish it Godspeed on its mission. And if the enemy's artillery allows it, this will continue until you are within 200 yards of the position, and our shrapnel are screaming by not so many feet over your head. You will also perhaps be fired over by hose-like streams of bullets from the machine guns, and showers from the troops in position. It is part of infantry training and discipline to accept these cheerfully, realizing that they can be far less injured by accidental hits than they would be by the enemy but for this added shower of bullets.

69. Returning to our first firing position, at say 800 yards from the enemy, and assuming that our commanding officers have arranged to strive for fire superiority, and that the captain gives commands for opening fire. What is your responsibility? To meet that last most important requirement, the delivery of the *most effective fire.* Here is the fruition of the squad leaders' training of his team. Has he brought his men to this point confident in themselves and in him? Can he get cool response to his commands, and carefully aimed shots? Leadership will be tested, the degree of discipline that has been attained. In this approach and in opening this fire are you and your men mutually helping the morale of each other, as do the members of a football team as they trot out on the field to meet their strongest rival—a jolly here, a quiet word there, and a sharp jolt to another? A little conversation in these tense moments will often dissipate the grip that apprehension is getting on your faculties. You may thus help yourself by trying to help others. As one student expressed it—"I have studied many battles, and have decided that the hardest thing to control in battle is yourself." If you can busy yourself with others you will lessen the strain. If you must think of self, why not think you are big game shooting, where to miss your aim may cost your life. You would force yourself to be steady then, why not now? You would not begin shooting up the landscape then but would hold steady for a good target. Do the same now.

70. Assume that our fire has reduced the enemy's hits, and we have attained fire superiority. Now comes the advance. You cannot shoot the enemy out of a defensive position; he must be driven out by actual assault. Therefore our line must advance, and as steadily and rapidly as

possible. While actually advancing the men are more exposed and are unable to fire. This necessitates advancing a small unit at a time, while all the other rifles concentrate on protecting them by keeping down the enemy's fire. The smaller the unit advanced the safer; but also the longer it takes. The general rule is to send forward each time the largest unit possible, and still have enough rifles engaged to maintain fire superiority. From any one of the firing positions, the first unit to advance may be a platoon, the next a squad, then two platoons might go; it may be that only one or two men may go at a time. The platoon chiefs decide, unless the whole troop is in the line and under the immediate control of the captain, when he decides. The first advance is made normally from one flank or the other, and having been inaugurated must be carried on as promptly as fire conditions admit, from that flank continuously throughout the line to the other flank. Each unit is led forward and placed in the new firing position as described in the school of the squad. The first unit forward advances to a designated position, or more often to a position that must be selected by its leader as he leads the advance. In selecting the new position the leader will go as far forward as seems reasonable (not to exceed about 60 yards unless under cover) and must choose a position that will be good for the rest of the line coming up on his flank. Each unit takes up the firing promptly upon arriving on the new line, and with its fire helps cover the advance of the others. These advances may be made by running, by creeping, even by rolling. Fire conditions, cover, and morale all are determining factors. The advance of the troop in attack would probably never be twice alike. The smooth working of its mechanism depends on the team work of its leaders, on their mutual understanding and co-operation; it is controlled by signals and can be acquired only by practice in varied ground. It may happen when one of these advances is ordered that certain individuals will feel that they can do better by remaining under their present cover. The Infantry has a noncommissioned officer behind each platoon whose function it then becomes to urge these individuals on to join their fellows. We have no one in our organization for this purpose; and where lack of discipline or morale seems to make it advisable, it would be well to detail a man in each squad for this purpose, instructing him to see that all the squad moved forward together, he being the last man, and thus rejoining the squad in the firing line at the next position.

71. As the attack progresses, casualties and the need for a heavier firing line, make reinforcements necessary. In the early stages these may be by group. But in the later stages, where the reinforcements must cross a fire swept zone, and will be brought up under cover of increased fire from the firing line, they will come deployed and will mingle in the line where openings are found. In large affairs these reinforcements will be from other organizations, and will always result in an intermingling of squads and command. It is important that this condition be brought about at drills, in order that when it comes in battle the men will recognize it as a natural condition, and not think our army has all gone to pieces; will know how to continue control and command even in this mix-up, and will be trained to reassemble promptly as soon as conditions admit. Reinforcements should never be sent in in driblets that will be absorbed without appreciable effect. Their arrival on the line should be felt by all in added strength, morale, and power to push forward again. Hence do not reinforce, or else do it strongly.

72. You will be given an additional supply of ammunition upon entering the fight. Every round is precious. In holding down the enemy's fire, shots that just skim over the entrenchments are very valuable in moral effect, and you must expect to expend them for this purpose. It is the duty of each man on the line to take all the ammunition from a disabled comrade beside him, and distribute it when opportunity offers. Reinforcements will bring extra ammunition which you also pass to each other. These are

your only sources of supply during the fight, and you will learn by experience not to waste any.

73. The advance continues to some point within 200 yards chosen by the commanding officer, from which the final charge will be delivered. He strengthens this line his utmost, pours in from it the heaviest fire possible, and at the opportune moment, perhaps as his last reserves join, orders the charge. If he has reached this point with sufficient force, it is probable that the enemy will not await actual contact, but will break and run. If they do run, our lines must steady into the first available firing position and deliver a deadly fire into the fleeing enemy. Here is where we get the casualties that even the score of ours during the costly advance. The commanding officer will at once organize a pursuit with formed troops; and as soon as the fleeing target disappears our intermingled troops of the firing line must be quickly reassembled into their proper organizations.

If the enemy does not flee, but accepts personal combat, the cavalryman has in his automatic pistol an arm for close encounter more deadly than the bayonet and of longer reach. He must keep his rifle in hand, however, for the execution it will do when the enemy finally runs.

74. The fire fight has been discussed thus in detail that you may form some mental picture of it which will enable the troop commander to take the troop through this training in varied ground, making it realistic and of practical value to both leaders and men. In this he should assume reasonable conditions as to the enemy, and by changing these conditions make them require on his part the various phases of the combat that he wishes to practice. And these conditions should in each case be explained to the men so they may get the benefit of an intelligent understanding of what they are doing. This is a good place to use "in place halt"—for these explanations and for corrections. Do not deplore having the exercise move slowly on account of these pauses. It will be but the more realistic. The real trouble is to make it slow enough.

CHAPTER VII

FIELD ARTILLERY

1. In spite of the tremendously increased importance of the artillery during this great war, its limitations, and functions remain as in the past. The field artillery's sphere is now, and always has been, limited to fire action on the field of battle. It is itself extremely vulnerable when exposed to artillery fire, after its location has become known to the enemy. When on the march, and, when unlimbered with its flanks exposed, it must rely largely for protection upon the other arms. When used for duties for which other arms are designed, such as reconnaissance in force, outposts, guard duty, etc., not only is it incapable of properly performing them, but its strength is frittered away, and its power to assist the other arms by fire action is impaired. This comes from the fact that every member of a battery is a cog, or substitute cog, in a firing machine. Strip from the machine a number of its cogs, and its firing power is diminished, but leave the machine intact, and it is the most powerful war machine in existence, capable of operating from concealed positions, and of concentrating the fire with terrible effect against widely separated targets at great ranges.

2. The Field Artillery has always been a much desired branch of the service, combining as it does the dash of mounted action with the use of highly efficient mechanical instruments, the application of which is a scientific study of great interest.

The attractiveness of Field Artillery lies in its efficiency. There is nothing poorer than poor artillery, a burden to its friends of other branches on the march, and more liable to inflict losses upon them than upon the enemy in battle. On the other hand, efficient Field Artillery is a joy to its friends, and the greatest dread to the enemy.

Efficiency can be attained only through constant study, and hard theoretical and practical work. No arm of the service requires so much time, and there is no royal road to a Field Artillery education.

3. **Classification.**—All guns may be divided into two classes: field guns and howitzers. Field guns range in size from the mountain gun, carried on mules, up to the 4.7-inch and 6-inch guns; howitzers from the light trench mortar, to the famous 42-centimeter howitzer, which it is said cannot be moved without the use of a railway.

4. **Field Guns.**—Their chief characteristic is that they fire comparatively light projectiles, with a very flat trajectory, that is, the course of the projectile from the muzzle to the target is a rather flat curve, like that of a rifle, not rising high at any time during its flight nor falling abruptly at the target.

In appearance the barrels of field guns are long and thin. If they fire from behind cover, such as a hill, they have to be some distance in rear of it, in order to "clear the crest."

5. **Howitzers.**—Their chief characteristic is that they fire comparatively heavy shells, with a very curved trajectory. In other words, in order to hit a target, they throw a shell high into the air, which then descends at a very steep angle upon the target. Howitzers are able to fire over cover from a position close to it, thus they can fire over a hill while hidden close under its slopes. Their barrels are short, fat, and stumpy. When firing the barrels point high into the air.

6. **Mobility.**—Artillery is further classified as to its mobility. Light field artillery is that normally assigned to the infantry division, and drawn by six-horse teams. Heavy field artillery is that assigned to army corps and armies, for use in the demolition of trenches and field fortifications, and is drawn by eight horses, or motor trucks. Siege Artillery is that of such calibre that horse-power is not sufficient to move it, and is used for extended operations against permanent or semi-permanent fortifications.

7. In the United States service the "Mountain,"

"Light," and the 3.8-inch Howitzer types, are classified as Light Field Artillery. Briefly their weapons are:

The Mountain, or Pack, gun, carried on mule back, is a Howitzer, 2.95 inches in calibre, throwing a 12½-pound projectile, with a maximum range of about 4200 yards. A new type of mountain gun is under test, of 3-inch calibre, throwing a 15-pound projectile to maximum range of 5500 yards.

The Light Artillery, commonly called Field Artillery, uses a gun of 3-inch calibre, throwing a 15-pound projectile to a maximum range of about 7200 yards. The Light Artillery of practically all nations is nearly the same. It is designed to accompany the infantry, and its weight and resulting power is determined by the pulling capacity of a six-horse team. In our service the same 3-inch gun is used for Horse Artillery. The cannoneers are mounted, instead of riding on the carriages, and the limbers are not loaded with ammunition. Thus lightened, the mobility is so increased that this equipment may be used to accompany cavalry.

The 3.8-inch Howitzer is also designed to accompany the infantry. Hauled by six horses it fires a 30-pound projectile to a maximum range of 6000 yards.

The 4.7-inch Howitzer is sometimes classed as Light Artillery, when drawn by eight horses. It throws a 60-pound projectile to maximum range of 6700 yards. This weapon has not fulfilled expectations, and is to be withdrawn from service.

8. In the United States service, the Heavy Field Artillery are the 4.7-inch field guns, throwing a projectile of 60 pounds to a maximum range of 11,000 yards; and the 6-inch Howitzer, throwing a projectile of 120 pounds to a range of 10,000 yards.

9. Organization.—At present there is only one regiment, in our service, which is armed with any guns of larger than 3-inch calibre. It is proposed, however, to organize the Field Artillery Brigade into three regiments instead of two, and these may have battalions of different type guns. It is even proposed in some cases to have batteries of different type weapons in the same battalion, provided that the mobility of the batteries is about the same. Horse and Heavy Field Artillery regiments will probably be organized with three battalions of two batteries each, while the organization of the other artillery regiments will remain two battalions of three batteries each.

10. **Matériel.**—The 3-inch gun is of built-up nickel steel, consisting of tube, jacket, locking hoop, and clip. The jacket envelopes the rear portion of the tube and forms a recess for the breech mechanism. The locking hoop is shrunk on the tube and the forward end of the jacket.

The breech block is of the interrupted screw type and is hinged on the right side of the breech recess in such a manner that one horizontal motion opens and closes the breech and rotates the block.

The recoil mechanism consists of a cylinder, piston rod, and springs. The cylinder is filled with oil, and upon discharge, the oil is forced through grooves in the piston rod head. The combined action of the oil pressure and the springs takes up the shock of discharge, the gun recoiling about 45 inches upon the recoil guide rails. The expansion of the springs throws the gun back into its firing position.

The panoramic sight, with which each gun is equipped, combines the properties of a magnifying telescope with an angle measuring instrument. The gunner with his eye to the eye-piece may bring into the field of view a magnified image of an object situated at any point of the horizon.

The elevating and traversing mechanisms are entirely independent of each other.

Steel plates are provided, which shield the cannoneers against shrapnel and rifle fire from the front. The battery commander is provided with a telescope, an angle measuring instrument similar in character to the panoramic sight. The battery specialists are provided with wooden rulers by means of which angles may be measured.

11. **Projectiles.**—The kinds of projectiles used in the field artillery are: Common steel shell (high-explosive shell), common shrapnel and high-explosive shrapnel, Shrapnel is used to fire against objects that have life, such as men and horses. Shell is used for the destruction of objects, such as houses, walls, batteries, for the destruction of trenches and men in them, and also against animate objects.

12. **Fuzes.**—The kinds of fuzes used in the field artillery are: Frankford Arsenal Combination Fuze, a point combination-time and percussion fuze for use in shrapnel; Base and point percussion fuzes, for use in common shell; Base detonating fuze for high-explosive shell.

13. **Powders.**—The powder charge is a nitrocellulose powder composed of cylindrical grains with 7 perforations running lengthwise to facilitate ignition. Black powder is used for saluting charges, and for ignition in smokeless powder charges. The high explosive for the shell is called Explosive "D."

Our Ordnance Department is now conducting tests with a powder which is *flashless* as well as smokeless. It is the same in form and size of grain as the smokeless powder, but of a grayish color. Using this powder, it is impossible to detect the flash of the gun, even in the open, at a distance of two miles; standing close to the gun, only a pear shaped irridescent glow is seen in front of the muzzle at the moment of discharge. At night, mounted defilade (the height of a mounted man) would completely conceal the flash. Pressures developed by this powder have not been uniform, but it is believed that this defect will soon be remedied.

14. **Ammunition and Fuzes.**—Fixed ammunition is used in the 3-inch field guns, and is made up as either common shrapnel, high-explosive shrapnel, or steel shell. Each round is issued with projectile filled and fuzed. The

weight of each projectile is 15 pounds, and the total weight of one round is 18¾ pounds. The propelling charge for all projectiles is of smokeless (nitrocellulose) powder. It is contained in the brass cartridge case in contact with the primer at one end, which ignites it, and the projectile at the other. The muzzle velocity for shrapnel is 1700 feet per second. That of shell is 1640 feet. All projectiles have a copper rotating band 1.2 inches from the base. The band engages in the rifling of the bore of the piece, and gives the projectile a rapid rotation about its long axis during flight. This causes it to travel straight, point on, without tumbling.

15. **Common Shrapnel.**—"In the shrapnel at present issued, the case is of steel with a solid base and open at the front. The front or mouth of the case is closed by a steel head screwed in, which carries the Frankford Arsenal Combination Time and Percussion Fuze. The bursting charge of 2¾ ounces of black powder is in the base and is covered by a diaphragm. The diaphragm supports a central tube which extends from the bursting charge in the base of the shrapnel to the fuze in the head, thus affording a conduit for the flames from the fuze to the bursting charge. A stopper of dry gun cotton is at the base of the tube to assist in igniting the bursting charge and also to prevent the loose grains of the bursting charge from getting into the tube. The case is filled with 252 balls about ½ inch in diameter, which are assembled around the central tube and held in place by a smoke-producing composition.

When the bursting charge in the base of the shrapnel is ignited the head is stripped, and the balls shot out in very much the same manner as from a shotgun. The bullets are scattered (due to the rotation of the projectile) in a cone, covering an irregular oval-shaped area of the ground in front. The bursting charge increases the velocity of the bullets by from 250 to 300 feet per second. The smoke-producing composition burns, making a white ball of smoke, which helps to indicate the point of burst."

16. "Common Steel Shells, also called high-explosive shells, have a pointed ogival head. The body is hollowed out to take the larger bursting charge of Explosive "D." The base detonating fuze is screwed into and closes the opening in the base of the projectile. The base cover is put on over the fuze and is intended to prevent the possibility of powder gases entering the shell cavity and causing a premature bursting of the projectile. This shell bursts on impact, and with great force exerted in all directions (front, rear, sides, up, and down) and is a powerful instrument for the destruction of material objects."

17. Ehrhardt High-explosive Shrapnel.—"This is a high-explosive shrapnel and is fitted with a combination fuze, and a high-explosive head. In time action, the case is not ruptured upon the explosion of the bursting charge, but the head is forced out and the balls are shot out of the case with an increase of velocity. In the meantime the head continues its flight, detonating on impact. All high-explosive shrapnel is detonated by means of the percussion use. If the fuze be set at "safety," or for a time of flight greater than the actual time of flight, this shrapnel may be used in lieu of high-explosive shell. Upon impact a high-explosive shrapnel is detonated by means of the percussion element of the combination fuze, the head being detonated first, which detonation causes the sympathetic detonation of the high-explosive matrix surrounding the balls."

18. Effects of Projectiles.—Nothing of a military nature is requiring greater scientific research than the effects produced by artillery projectiles. Some observations taken from reports of military observers during the present war are given to illustrate the destruction produced by various projectiles of different calibres.

Shrapnel.—Against troops in the open this is terribly effective, if properly handled. It has little effect against intrenched troops, or those protected by gun shields, other than to keep them under cover. It will ignite buildings more readily than shell, but is otherwise useless against fortifications or field works of any nature.

19. For mid-ranges shrapnel is timed to burst at a height of about 23 feet, and when so bursting in front of advancing troops, has a deadly and effective stopping effect. A single well burst shrapnel has, in this war, been known to cause 47 casualties in a single platoon, which was caught in column of fours on a road. Although shrapnel manufactured for the United States Field Artillery is, when bursting at the most effective height, designed to produce one hit per square yard, effective shrapnel balls actually have a dispersion over a space about 200 yards in depth and about 20 yards in width, within which there will be one hit per square yard. Men in two or three consecutive lines may be hit by bullets from a single shrapnel. Its chief use against men in trenches is that it prevents them from firing. It can produce only a local effect on a trench, owing to the comparative weakness of the bursting charge.

20. For efficient shrapnel fire, the observing officers must see simultaneously both air bursts and the target, and be able to communicate the necessary corrections to the battery. Badly adjusted shrapnel fire is ineffective. Bullets from a very high burst lose their velocity rapidly, and often will not even penetrate clothing. Bursting very close to the ground, or upon impact, they produce only local effect. The angle of fall from high bursts is steep, while effective bullets from low bursting shrapnel follow nearly a horizontal path. Hence soldiers in the open in the present war are trained to stand, when under fire from shrapnel bursting high, and to lie down when it is bursting low.

21. Shrapnel bullets will not damage the walls of a house, though they will pierce windows, doors, and probably the roof. Hence under shrapnel fire the lower rooms of a house are safer than the upper. If a house is to be held, the windows should be barricaded by mattress, etc.

22. An unburst shrapnel projectile will knock a hole in any but the thickest walls, but the damage done inside will not be great, and, entirely local. There will be no tendency to blow the house down, and only those in the narrow path of the projectile and its bullets will be injured. Many such shrapnel may pass through a wall without knocking it down, the holes being clean and comparatively small.

23. Shell.—Although commonly understood to be a projectile for use against inanimate objects only, a thin walled shell carrying a heavy high-explosive charge has come to be largely used in the present great war, not only against intrenchments and fortifications of all kinds, but even against troops in the open. It is more effective in width, than in depth, and bursting immediately over a trench, will have a great effect for a distance of nearly 50 yards in all directions perpendicular to its flight.

24. The type preferred for use against infantry is known as "delayed impact fuze," in which the shock of impact arms the fuze and the projectile then ricochets and bursts about a yard from the surface of the ground with terrible effect. This requires short enough ranges to allow flat trajectories, otherwise the angle of fall is so steep that the shells do not ricochet.

25. In considering the relative value, against advancing infantry, of shrapnel and high-explosive shell, the moral effect of the latter must be considered. The detonation of a high-explosive shell is terrific, whereas the shrapnel burst makes comparatively little noise. The artillery, in repelling an infantry attack, attempts to create a curtain of fire in front of them. This curtain seems to be more real and more effective when high-explosive shell is used. It is probable that the actual number of casualties from shrapnel is greater, but it is more difficult to make infantry pass the area in which high-explosive shells are bursting with dreadful detonations, accompanied by clouds of smoke and whirl of flying steel fragments. Moreover, the actual losses from shell fire are undoubtedly greater than was at first supposed, as the small particles of shell cause many slight wounds, and it is found that most men take advantage of any decent excuse to retire to the rear.

26. The high-explosive shell is the only projectile used in the attack of intrenchments, bombproofs, dug-outs, etc. The larger the calibre of the shell, the more effective its fire. Tests with our 6-inch Howitzers prove conclusively that bombproofs, covered with 12 feet of dirt, do not provide adequate protection against these weapons. It is reported that shells from 12-inch Howitzers penetrate medium earth to a depth of 30 to 40 feet, their explosion forming craters sometimes 100 feet in diameter.

27. A shell bursting after penetrating a trench produces a doubly violent explosion due to the confining effect of the trench walls. Not only will men in that length of the trench be killed, but walls knocked down, and traverses, unless very strongly built, demolished. Where the shell has buried itself in the ground, its explosion causes the walls to fall in, burying the men and often producing great effect to the rear, the force of the shell explosion taking the line of least resistance, and going back through the ground which the shell pierced.

28. Shrapnel is absolutely useless in the destruction of wire entanglements, and even the number of shells required to open a small passage is enormous. It is stated on good authority, that over 300 shells of 3-inch calibre are required to demolish a barbed wire entanglement 25 yards in depth, and of a width which will permit a squad in column of fours to pass. With guns of larger calibre, the number of shells required is, of course, less.

29. The proportion now being used in the European War is as high as four shells to one shrapnel. It is, however, questionable as to whether this proportion would obtain were the operations carried on against less permanently prepared positions. In our service the proportion of shrapnel is very greatly in excess of that of shell. Our 3-inch shell, moreover, carries only about one-third as much high-explosive as does the thin wall type of shell described above, and it is not provided with a delayed action fuze, which permits the projectile to burst on ricochet after impact.

30. Although the efficiency of the high-explosive thin wall shell cannot be doubted, reports indicate that between three hundred and five hundred French field guns have been demolished, due to premature detonation of these projectiles. In considering the adoption of this type of projectile our Ordnance Department hesitates to adopt a shell which is at the present time almost sure to cause the destruction of many field guns and their gun crews.

It is pointed out, however, that the French field guns have probably fired several thousands of these shells per gun, and it has been stated that the French authorities expected to have premature detonation of one shell in every seven thousand. Therefore their loss of three hundred guns was probably within their calculations.

TRAINING

31. The object of all mobile artillery training is ability to march and ability to shoot. Marching includes proficiency in all operations necessary to bring the guns and ammunition into action, at the proper time and place; and proficiency in driving, care of horses, fitting of harness and equipment, camping, and in the occupation of positions.

32. **Marching.**—Eternal vigilance is the price of a successful artillery march. All officers and noncommissioned officers must be ever ready to save the horses, by correcting faults of driving, by constantly re-adjusting the harness and by seeing that the horses are cared for at the halts.

33. The batteries should alternate in leading the column for the day, and the platoons should alternate in leading the battery. Each section in the battery should take its turn in hauling the battery wagon, and the battery store wagon. No carriages should be permitted to fall out of the column except by order of an officer, in which case the vacant space should be maintained until the carriage regains its place, at the next halt, without increase of gait.

34. When the command " Halt " is sounded at the head of the column during the march, all carriages should be immediately hauled well to the right of the road, leaving at

least half of the road clear for traffic. All horses, including officers' mounts, should be held on the same side of the road as the battery. Collars should be at once unlocked, and placed on the blanket immediately in front of the pommel of the saddle, wiping the inside clean. If the weather is hot, the horses' nose and mouth should be sponged out, when necessary using water from the canteens. The horses' shoulders should be well massaged, the cannoneers assisting with the off horses. Cinchas should be tested by the officers. Exhausted animals must be replaced by spare horses, before they have become too exhausted to keep up with the column. In case the road is muddy, the martingales and side straps should be wiped clean. It must be impressed upon the men that the halt is made for the benefit of their *horses,* and the *entire* time should be devoted to the care and replacing of horses, readjustment of equipment, etc. Sufficient time should be given after the command "Attention" has sounded, to admit locking the collars; and no collars should be placed in position until "Attention" has been sounded.

35. Double distances may be maintained between carriages and increased distances between batteries at the discretion of the battery commanders.

36. During a march the battery commander should not ride at the head of the battery, where his presence is rarely needed, but alongside the column, where faults usually occur. When the battery leaves the park, he should halt and let the battery pass him, observing carefully everything pertaining to the personnel, horses, equipment, fit of harness, etc. He should then trot slowly up on the other side, thus observing the condition of practically everything in his battery.

37. In going down hills, the breeching should not be permitted to touch the horses, the carriage being held back by the brake—as it is much harder on the horse to hold back, than it is to pull. The cannoneer on the brake should be required to be alert, and apply the brake properly for even slight grades.

38. **Driving.**—The training of the driver begins with riding, and is completed when he can properly ride one horse and drive another. He must be shown the necessity for each pair in a team acting as part of a unit so that every horse of the six will do his share of the work. Authorities give the average life of an artillery horse during the early days of the Great War (when marching was done) as less than two weeks. This emphasizes the necessity for thorough instruction of drivers, in order that they may know how to conserve their teams.

39. On the march each horse must do his share of the work. Every driver should keep the traces of the pair ahead of him tight. If slack, his own pair are doing their work. Old and experienced drivers sometimes try to save their horses by keeping their traces seemingly tight, without permitting them really to pull. Careful observation on the part of officers will prevent this.

40. The drill regulations prescribe the proper seat, and the methods of riding and driving, and should be carefully studied. The wishes of the rider are conveyed to the horse by means of the reins, legs, and whip. The horse must be kept up on the bit, the near horse by the driver's legs, the off horse by the whip. If the whip be not skilfully used, the near horses start the carriage and regularly do the greater share of the work. The proper use of the whip is a difficult thing to learn, so difficult that many batteries prohibit its use entirely. Generally speaking, a driver who raises his whip and strikes his off horse, instead of putting him into the bit, drives him away from it, and out of the line of draft. Many horses are ruined for artillery purposes by fear of the whip, and when working on the off side, travel as far as possible away from the driver, devoting all their energies to pulling sideways, instead of in the line of draft. The whip should be skilfully applied to the off horse on his off side behind the saddle, in such a manner that the horse will not see it. This will urge the off horse gently forward, somewhat as the driver's legs do the near horse. Except in the rarest cases, and

only by direction of an officer, should the whip be used for punishment.

Fitting Harness.—The variety and shapes of collars issued by the Ordnance Department, makes it possible to fit any horse, no matter how poor his conformation may be. Horses should be fitted with the smallest sized collars, let out to the limit, in order that they may be taken up sufficiently to fit the horse as he losses flesh on the march. Too tight a collar will do less harm than one too loose.

41. To fit a collar, it should be placed well back on the horse's shoulders, into the position it will occupy when he is in draft; then take hold of the collar by the front flange, on the side opposite to the horse's mane, and pull it directly outward from the neck. The collar should be loose enough to permit the hand being inserted flatwise under the collar all along the side toward this pull. Draft plates should be put up at the highest hole, in order to bring the draft as far up on the shoulders as possible. There may be some horses, on account of their straight shoulders, which require the draft plate down to the centre hole, but they are very rare.

42. The draft spring which is located directly underneath the draft plate, should be closely watched, as it easily collapses. When this occurs it should be immediately replaced by a new one. As the wheel pair usually does more work than the others, collapsed collars are more frequently found there.

43. Tight clinching should be avoided, as it is not only uncomfortable for the horse, but also produces cincha boils, difficult to heal. The cincha should be adjusted just tight enough to permit the flat of the hand being inserted between the cincha-ring safe and the horse's side.

44. The breeching should be adjusted so that it will lie in prolongation of the sidestraps, and just below the points of the buttocks. Except for drill purposes, the breeching should be so loose that it cannot impede the action of the horse in draft.

45. With our present collars it is difficult on prolonged marches to avoid sores on the top of the neck of the wheel horses, due to the weight of the pole, and also the component of down pull caused by the single tree being lower than the point of adjustment of the trace to the collar. To avoid this component of down pull, the trace should be normal to the rear line of the collar, which may be accomplished by running the trace through loops in a strap over the back of the near horse behind the saddle, and over the seat of the saddle of the off horse. This transfers the downward component of draft from the horse's neck to his back.

46. With the lead horses, instead of a downward component of draft, there is an upward component, which causes their collars to ride up, and tends to choke them. This component may be transmitted to the cinchas by running the lead traces through loops buckled to the cincha rings.

The entire subject of harness fitting is ably described in an article by Major Charles P. Summerall in the January-March, 1913, Field Artillery Journal.

47. Camping.—This differs from other arms only in the presence of the horses and carriages; and *system* enables the battery commander to see that horses, men and matériel are properly cared for with the least friction.

The battery is parked, the picket line stretched to the caisson body wheels, and the horses cared for. Hay is fed, to keep the horses quiet, and take the edge off their hunger, while they are groomed, backs and legs massaged, etc. They are then watered and fed grain, and the grain bags then refilled for the reveille feed. The officers give close attention to shoeing, treatment of injuries, and general care of the horses.

Then camp is made. The men generally prefer to sleep under the paulins, rather than in shelter tents, and this is more comfortable, particularly in stormy weather.

48. Watering.—In all mounted commands, the way this duty is performed is the best indication of their efficiency, and in campaign, will largely determine the ability of the command to march. The more formal this duty is made, the better it is performed, and the less time it will take. No men are permitted to attend water call with sleeves rolled up, or otherwise disorderly in appearance.

This duty is so important that it is here laid down in detail for a battery. The captain is always present, if possible. The horses are led from the line and the men stand to horse. All are mounted at command, and marched to water. The battery is formed at the watering place, in column of platoons or in column of sections, according to the facilities of the place.

If buckets are used, they are arranged in line in front of the platoon or the section, one bucket to every animal in the line. The strictest discipline is maintained. There should be no commands except those given by officers.

If watering from a trough, each driver approaches the trough from the left, making a detour to approach the trough perpendicularly, and closes in to the right. If dismounted, he stands to the left of his horse, and pushes his pair to the right. This takes full advantage of the facilities offered. No horse is permitted to leave the watering place, until all horses there have completely finished drinking, and then all should leave at command. Horses are gregarious creatures, if one leaves the trough, all others forget about drinking and try to follow. After each platoon, or section, has been watered, it should be formed in line in rear of the column, and when all are watered the battery should be marched back to camp.

It is useless to water in the early morning, as the horses seldom drink at that time. On the other hand, these early hours are best for marching. It is therefore advisable to start at once, and water wherever the facilities are first found, preferably at the second halt.

SELECTION AND OCCUPATION OF POSITION

49. The tactical situation always determines the employment of the artillery, and the location of the battery positions is largely beyond the control of the artillery

commander. Nevertheless, an artillery officer accompanies the commanding officer and will be consulted as to the general locality in which the artillery shall be placed. Subordinate artillery commanders are charged with the selection of the immediate positions to be occupied.

During the present war it has become an axiom that "a battery exposed, is a battery lost," and concealment of the artillery and its gun flashes are matters of prime concern. Not only is the battery concealed from the view of the enemy by natural features of the terrain, hills, woods, etc., but the guns and caissons are covered with trees and brush, to disguise them from aeroplane observation.

50. "Direct fire" positions, where the battery is exposed, are only employed in the following cases: in rear guard actions, where the possible loss of the battery is compensated for by the safe withdrawal of the main body of the troops; in advance guard actions, where the element of surprise gives a tactical advantage; in exceptional circumstances on the battlefield, which justify its exposure and sacrifice, in support of its infantry.

51. Modern artillery combat generally requires "Indirect fire," which affords concealment from observation, and shelter from fire. In selecting this position, an observing station for the officer conducting the fire must be located, which enables him to see all positions that may be occupied by the enemy, and to communicate with his batteries. The limbers must be concealed and sheltered from the enemy's fire, yet near enough the guns to render possible the quick withdrawal of the battery. Similarly the combat trains are protected, yet close enough for the re-supply of ammunition.

52. Upon arriving at the general location, selected by the superior commander, the officer in command of the artillery, accompanied by his staff and artillery specialists, reconnoiters the position and selects the exact location for the guns, the combat trains, and the limbers. He then selects an observation station, computes firing data for

his batteries, and prepares to establish communication with them.

53. In the normal occupation of a position by a battery, the battery commander, as he proceeds to the position, is accompanied by the first sergeant, an instrument sergeant, a telephone corporal, two signallers, two scouts, and a musician who acts as horse-holder. Before leaving his battery, he subdivides it for action into the firing battery, consisting of four gun sections and a caisson section; and the combat train, consisting of six caissons, the battery and store wagons, two pairs of harnessed spare horses, and the reserve men.

54. After the battery commander has selected the positions for his guns, observation station, etc., he directs the instrument sergeant to calculate firing data, covering all targets in view, has the telephone corporal establish semaphore or telephone communication between his observation station and the gun position, and his scouts observe the positions of the enemy and make the panoramic sketch. He then sends word to the officer with the firing battery, by the first sergeant, directing him to bring up the battery, and occupy the position selected; also telling him the aiming point, position of the limbers, the route, and gait to be followed. By the time the battery has arrived at the position and gone into action, all firing data should have been prepared and sent to the guns.

55. The cover, which conceals the position of the guns, should provide "flash defilade," which means that the flashes of the guns are concealed from the enemy, and requires that the cover be at least 12 feet higher than an imaginary line joining the gun and the enemy. The battery must come into position so carefully as to prevent disclosing its presence to the enemy.

56. **Clearing the Mask.**—In selecting the position for flash defilade, it is necessary to determine whether or not the fire of the guns will clear the crest in front of them. If the guns are already in position, set them at the required elevation, and a glance through the open bores

will determine whether or not the projectiles will clear the crest. If not in position, the angle of departure corresponding to the least range at which it is desired to fire must be determined, and if this is less than the angle measured from the position of the guns to the top of the crest, it will be necessary to move back until the angle of departure is the greater, when the elevation of the muzzles will be sufficient for the projectiles to clear.

57. **Panoramic Sketch** (see Fig. 1).—This is a diagram of the terrain in which the artillery targets are situated, or expected to appear. Properly constructed it enables an artillery commander to train the fire of his guns, in a minimum time, upon a designated target, even if he does not see it. It also enables him, or an officer who might later relieve him, rapidly to identify the targets in the sector.

It should contain all targets located in the sector, and designate the range and deflection to each of these targets as accurately as possible. No attempt at artistic effect is made, all available time being used in observing and locating targets.

A "data line" is drawn about one inch from the top of the paper, separating the sketch from the data. Ranges are indicated above the line, where "M" stands for Machine Guns, "B" for battery, "I" for Infantry, and "C" for Cavalry, etc. The most prominent point in the landscape is marked as the origin, from which deflections are measured in mils to the right and left, and indicated just below the data line.

58. **Fire Action.**—This includes all measures necessary for calculating firing data, the fire for adjustment, and the fire for effect. For effective fire action the battery must have "*Fire Discipline,*" the result only of much training and practice, which insures an orderly and efficient working of the personnel in the delivery of fire. Nor is this enough; the officers of the battery must be proficient in "Conduct of Fire." This means using the proper technical means to cause fire of the desired nature to be

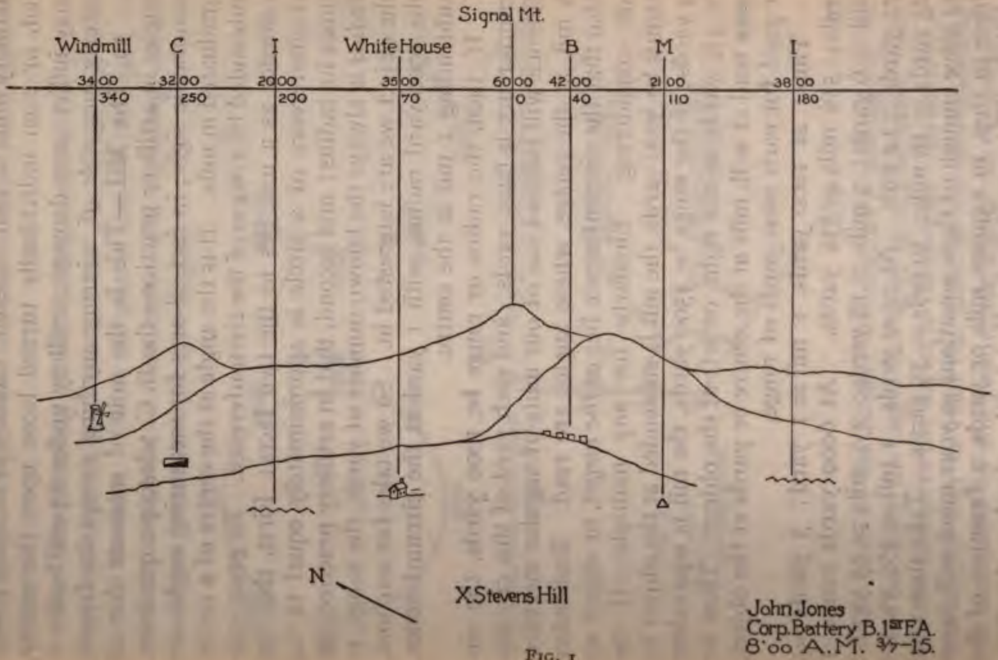
Signal Mt.
Windmill
C
I
White House
B
M
I
34|00
340
32|00
250
20|00
200
35|00
70
60|00
0
42|00
40
21|00
110
38|00
180
N
X Stevens Hill
John Jones
Corp. Battery B. 1st F.A.
8:00 A.M. 3/7–15.

Fig. 1

brought to bear on the target. Above all other arms, the artillery must be well officered. Cavalry or infantry poorly led, or even individually turned loose upon the enemy, may inflict some damage; artillery under a poor leader is utterly incapable of injuring anything except its friends

59. **The Mil.**—This is the unit of measure for all angles in artillery practice—the B. C. telescope, quadrant, panoramic sight, in fact all arcs for measuring angles are graduated in mils. It is the angle at the centre of a circle, subtended by 1/6400 of the circumference. Its great convenience as a unit lies in the two facts: First, that the circumference of a circle is approximately equal to 6.4 times its radius; and second, that in artillery practice, the *radius* is always the known number of yards, the range, to the object we are interested in. So we take for our unit, the 1000-yard radius, with 1 yard at the circumference, subtending 1 mil at the centre.

If, then, the radius or range be 1000 yards, the circumference is 6400 yards; and each yard of this circumference will subtend one of our units of angular measure, a mil, at the centre, where angles are read. Remember also that the circumference lies *at the target,* or object we are considering. Similarly for any multiple,—if the radius be 3000 yards, the mil is subtended at the object by 3 yards; if the range be 4500 yards, the mil is equivalent to 4½ yards, to the right, or left at the object. Thus we may read at will, mils at the centre or yards at the object, 1 yard for each 1000 yards of range.

Thus: at 1000 yards, 1 mil = 1 yard; 3 yards = 3 mils; 5½ mils = 5½ yards. At 6000 yards range, 1 mil = 6 yards; 3 mils = 18 yards; 2½ mils = 15 yards; 72 yards = 12 mils. At 2500 yards , 1 mil = 2½ yards; 25 yards = 10 mils; 30 mils = 75 yards. Take time now to solve enough of these equations so your mind will never have to stop, to express mils or yards, a function of the radius. This resolves itself into the simple rule, "*the angle in mils is equal to the distance which subtends it at the target, divided by the range in thousand yard units.*"

Thus the front of an enemy battery, 60 yards, at 5500 yards range, is equivalent to $\frac{60}{5.5}$ or 11 mils (fractions being discarded).

60. The Reading of the Instruments.—The zero of the panoramic sight clamped to the gun, is parallel to the axis of the bore. When the gun is laid on the target, the zero of the sight is on the target. The sight is graduated clockwise from 0 to 6400 (see Fig 2).

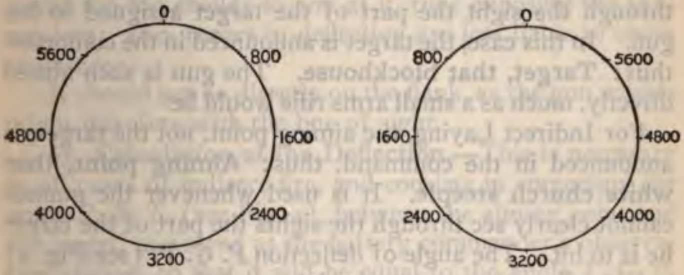

FIG. 2

The graduations on the panoramic sight are clockwise

The graduations on the B. C. telescope are counter clockwise

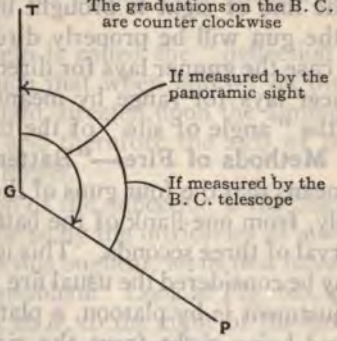
T
If measured by the panoramic sight
G
If measured by the B. C. telescope
P

FIG. 3

T=Target.
G=Gun.
P=Aiming point.

The zero of the battery commander's telescope is directed not upon the target, but upon an aiming point, from which he measures the angles to the targets. In order that these angles may be read the same as the corresponding ones measured by the panoramic sight, the telescope is graduated counter clockwise, from 0 to 6400 (see Fig. 2). So, if the angle *T. G. P.* (see Fig. 3) be measured by both instruments, the readings in each case will be the same.

61. To Open Fire.—The commands of the battery commander would be: 1. **Battery Attention.** 2. **Aiming Point—that windmill.** 3. **Battery from right, or right from right, etc.** 4. **Deflection 3450.** 5. **Open, or close, by 5.** 6. **Site, 305.** 7. **Corrector 27.** 8. **3500 (Range).** 9. **FIRE.**

62. Methods of Laying, Direct and Indirect.—The former may be used when the gunner can clearly see through the sight the part of the target assigned to his gun. In this case, the target is announced in the command thus: **Target, that blockhouse.** The gun is then aimed directly, much as a small arms rifle would be.

For Indirect Laying, the aiming point, not the target, is announced in the command, thus: **Aiming point, that white church steeple.** It is used whenever the gunner cannot clearly see through the sights the part of the target he is to hit. The angle of deflection *P. G. T.* (see Fig. 2) is laid off on the panoramic sight, and the gun traversed until the line of sight is brought upon the aiming point, when the gun will be properly directed upon the target. In this case the gunner lays for direction only, and another cannoneer lays for range by means of the quadrant, on which the "angle of site" of the target has been set off.

63. Methods of Fire.—"**Battery from the right, or left,**" means that the four guns of the battery are fired successively, from one flank of the battery to the other, with an interval of three seconds. This is called a battery salvo, and may be considered the usual fire for adjustment. When the adjustment is by platoon, a platoon salvo is fired, the command being **right from the right,** or **left from the right.** These are used to save time and ammunition.

If the wind is blowing from right to left, the salvo is fired from the left flank, and *vice versa.* In this way the smoke of discharge from one gun is not blown in front of the next at the moment of firing, nor will the bursts at the target be blown into each other and obscured, thus rendering it impossible to distinguish where the individual shots fell. If there is no wind, it is general practice to fire from the right flank.

64. Aiming Point.—This should be so prominent as to be easily recognized at the battery commander's position, and at the guns.

It should be high, at a distance of 2000 yards or more, and if possible, visible from all guns. It should be located in rear of the guns. If in front it might be necessary to lower the top shields to aim at it, thus exposing the cannoneers; also, errors in deflection are less liable to cause cross-fire.

It should not be directly on the flank, as the gun wheels might interfere with the line of sight.

65. Calculation of the Deflection.—This is necessary in all cases of indirect fire, and consists in correcting the angle *P. B. T.* (see Fig. 4), between the aiming point and the target, measured at the battery commander's observation station, so that it will be equal to the angle *T. G. P.* between the target and the aiming point measured at the right gun.

This corrected angle is called the "deflection of the right piece," and is such that when laid off on the panoramic sight, and the sight directed upon the aiming point, the zero of the sight and therefore the axis of the gun, will be pointed at the target.

66. This calculation of the deflection is the bugbear of young artillerists, made so by the intricacies of antiquated methods. To dissolve this bugbear, let us first have a clear mental picture of the problem. Look at Fig. No. 4. The battery commander is at *B*, to the right of his battery at *G*, with the aiming point to the rear of the battery at *P*. He can see both *P* and *T*, and measures directly with his telescope the angle *P. B. T.* But this angle is not correct for *G*. He must correct it by subtracting the two "offset angles," *P. B. P'.* and *T. B. T'.*, which gives him the angle *P'. B. T'.*, equal to the desired angle *P. G. T.*, for the right gun. And this is the whole basis of the famous "calculation." These offset angles are determined by measuring or estimating the perpendicular distances, *Bx* and *By*, and converting them into their angles at *P* and *T* respectively.

To determine the angle of deflection practically, using a B. C. telescope, lay off on the telescope the *P* offset, direct the telescope upon *P*, clamp the lower limb, swing the telescope to *T*, read the angle, and subtract mentally the *T* offset, and you have the desired angle *P′*. *B*. *T′*.

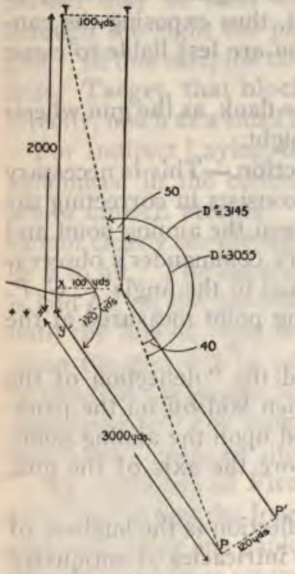

FIG. 4

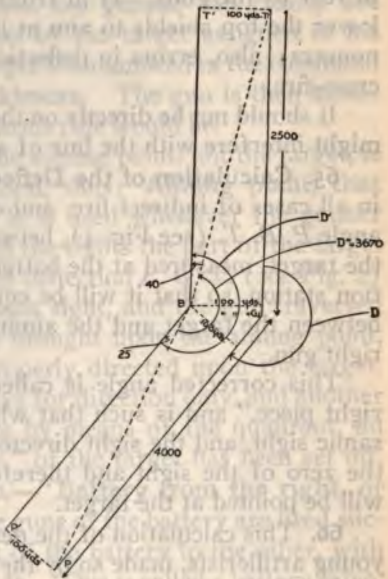

FIG. 5

67. In case no telescope is available, the angle *P*. *B*. *T*. may be measured by the ruler instead, and the sum of the offsets at *P*. and *T*. subtracted mentally. This gives the same results.

In case you have forgotten the rules given below, governing the application of these principles to the different situations resulting from changed relative positions of the B. C. station, *P*, and *G*—it will be helpful to establish in the landscape real objects representing *P′* and *T′*. To establish *P′* practically compute the offset angle at *P*, and lay this off on the ruler; with the zero at *P*, sight through the point measuring the angle, and along the extension of this line of sight select a natural object in the landscape, which will be *P′*. Similarly for *T′*. Now measure the angle *P′. B. T′.*, which will be the desired angle.

To illustrate by a practical example (see Fig. 4): To determine the offset at *P*—the distance $By = 120$ yards $=$ 40 mils. The offset angle at *T* is similarly found to be 50 mils, and their sum 90 mils, subtracted from the original reading for *P. B. T.*, 3145, leaves the angle *P′. B. T′.*, 3055, the desired angle.

68. For the different phases of this problem, presented by changes in the relative positions of the B. C. station and aiming point, the same principles apply, adapted to each of the four situations, as clearly shown in the four figures, Nos. 4, 5, 6, and 7, each of which you should now be able to solve.

69. These may be summed up in these two rules:

I. AIMING POINT TO THE *REAR:*

B. C. station on right flank, subtract both offsets; B. C. station on left flank, add both offsets.

II. AIMING POINT TO THE *FRONT:*

B. C. station on right flank, subtract offset from the target, and add offset from aiming point; B. C. station on left flank, add offset from target, and subtract offset from aiming point.

70. The Deflection Difference (D. D.).—In indirect fire, to obtain the necessary distribution of fire of all the guns collective distribution is used (see Fig. 8). For parallel fire, and for practical purposes this only need be considered, the difference in deflection (D. D.) between any two consecutive guns is a constant, and is equal to the angle at the aiming point subtended by the distance between the guns, called the "parallax" of the Aiming Point.

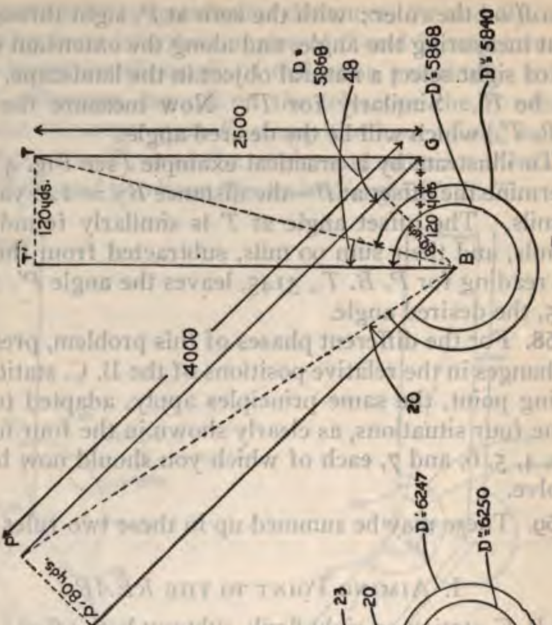
T
T'
120 yds.
2500
4000
P'
P
80 yds.
G
B
80
120
120 yds.
48
D = 5868
D' = 5868
D'' = 5840
20

FIG. 7

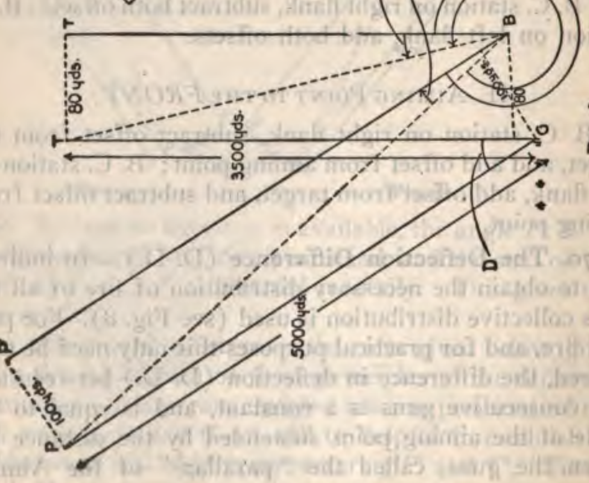
T
T'
80 yds.
3500 yds.
5000 yds.
P'
P
100 yds.
G
B
23
20
80
100 yds.
D' = 6247
D'' = 6250
D

FIG. 6

71. Parallax is defined in Drill Regulations, as follows: By the parallax of the target, or aiming point, is to be understood the angle subtended at the point in question by the width of a platoon front at the battery. Its value in mils is quickly calculated by dividing 20 (width of a platoon front) by the number of thousands of yards in distance from battery to point. Thus if the distance to target is 2800 yards, its parallax is 7. Fractions are disregarded in making the calculation, the nearest whole number being taken.

If the line from the position of the guns to the point whose parallax is sought is considerably oblique to the normal to the battery front, then a correction for obliquity is applied to the parallax.

72. Referring to Fig. 8, we see that *D′*, deflection of second piece, equals *D*, deflection of right piece, plus *P. G. P.*; or equals *D* plus *P*, parallax of the *A. P.* Thus by adding *P* twice, and three times, we get the deflection of the third and fourth pieces, respectively.

If the *A. P.* were to the rear, we would subtract successively the parallax of the *A. P.*, instead of adding it. So in parallel fire we " open " by the parallax of the *A. P.*, if the *A. P.* is to the front; and we " close " by the parallax, if the *A. P.* is to the rear.

73. If the fire were converged upon a point (T), the deflection of the second gun G_1, would be closed from parallel fire by an amount equal to the angle T_1G_1T., which is equal to $G_1\ T.\ G.$, the parallax of the target T. So, for convergent fire, the *D. D.* is equal to $P - T$, P being negative when the *A. P.* is to the rear.

74. The deflection difference for fire more widely distributed than parallel fire is found by " opening " by an amount equal to ¼ the front to be covered, after converging on the right of the target. In other words, by applying the formula *D. D.* equals $P - T$ plus $x/4$, where x is the width in mils of the front to be covered.

75. **The Corrector.**—The corrector determines the height and burst of shrapnel. Raising the corrector one

mil on the fuze setter scale, raises the height of burst about one mil. It really shortens the time of burning for the fuze, so that at mid-ranges the burst occurs along the line of the projectile's flight about 25 yards nearer the gun, and the burst appears, from a position at the battery, to be about one mil higher in the air. In opening fire, for adjustment, it is customary to use a corrector setting which should give a burst at the height of the target, called "zero height," which affords best observation. When shell is used, no corrector is employed, as only bursts on impact will occur.

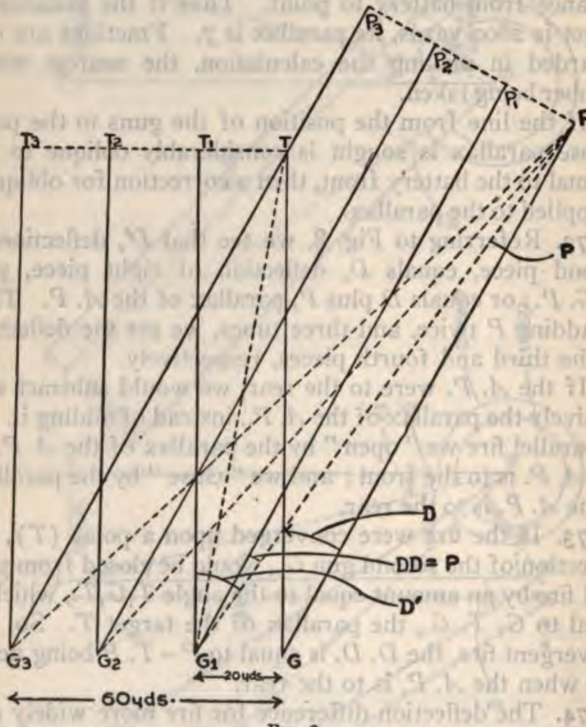

FIG. 8

76. Angle of Site.—In indirect fire, when the gun and target are at different levels, it is necessary to set the gun at an elevation corresponding to the height of the target. The angular measurement of this difference, expressed in mils, is the "angle of site." Practically speaking, the "angle of site" is such that when set off on the quadrant, the axis of the bore will point directly at the target. Having set off the angle of site, the gun is given the additional elevation corresponding to the range.

If the target can be seen at the gun, the angle of site may be measured directly. In indirect fire, it has to be determined at the B. C. station, which is usually at a different elevation from the gun or the target, and generally above the gun.

To find the angle of site, it is necessary to determine the difference in level between the gun and the target in yards, and to convert the yards into mils. Thus if the target be 20 yards above the guns, at a range of 4000 yards, the angle of site in mils will be 20 ÷ 4, or 5 mils, above the guns. For convenience the vertical scales of all artillery instruments are graduated from 0 to 600, and the centre of the reading, 300, corresponds to horizontal. So, in our problem, the "angle of site" would be 300 plus 5, or 305.

77. Range.—This is determined either by the range finder, or by estimation. The word "range" is not announced as part of the firing command, the number of yards only is given, in order to make the command as short as possible. When commands are needlessly long, not only is the difficulty of their correct transmission by semaphore or telephone increased, but the speed of the firing battery is reduced.

78. Fire for Adjustment.—The firing data having been calculated, and the fire opened, it is necessary to observe results, and promptly correct for its adjustment, in order that an effective fire may be brought to bear on the target in the minimum time. This preliminary fire is called Fire for Adjustment, and consists in determining the gun range, the correct direction of the fire, and its most effective distribution over the front of the target. When shell fire is employed, the height of burst cannot be altered, but when shrapnel is used, the proper adjustment of the height of burst is also required.

79. Observation and Adjustment of Errors in Range.—Goerz or Zeiss self-contained metre base range finders have been issued for use at the School of Fire, and to battalion headquarters. These instruments can be depended upon for an accuracy of about ninety per cent. and their use greatly simplifies the determination of the range. However, these range finders are both of German make, and their supply is no longer available for the U. S. Army. Range finding instruments manufactured in this country have not yet proved satisfactory. However, even when a range finder is used, the accuracy of the instrument is not taken for granted, and the range is determined by a system of bracketing the target; that is, by enclosing the target between rounds fired at a known difference of range, which strike respectively short of, and beyond, the target.

If the first round is *short,* the range is increased; if *over,* it is decreased; and rounds are fired successively increased or decreased in range, as the case may be, until the target is bracketed. The change in range from round to round in this process of finding the first bracket is usually taken as 400 yards. Only in cases in which the range has been carefully predetermined, or in which observation is especially favorable, may a smaller change in range be safely employed.

80. "Having bracketed the target, the size of the bracket may be successively reduced by halving the last bracket obtained; that is, by firing at the mean of the last two bracketing ranges. The extent to which this reduction in the size of the bracket should be carried is entirely dependent upon the nature of the target and the circumstances of the case.

If the target is surely included within the limits of the bracket finally accepted, it may be reached more or less effectively by subsequent fire. The first consideration, then, is to determine that fire at a certain range is surely short of the target, and that fire at another and greater range is surely over the target. A second but very important consideration is to reduce the differenec between these two bracketing ranges as much as possible; that is, to obtain the smallest bracket compatible with the circumstances of the case.

It is rarely possible from a position near the guns to estimate with accuracy the amount of the error in range. Such estimates are usually too small, and cause delay through an effort to adjust the fire by making timid and insufficient changes in the range. Attention should rather be concentrated on deciding, from careful observation of each shot, upon the sense of a series of shots fired from the same data, and on quickly enclosing the target with fire, which is surely short, and fire which is surely over. By gradually narrowing the bracket thus determined, an effective adjustment may be secured."

81. "A burst in air produces a ball of smoke which ordinarily remains together for sometime. The bullets and fragments from a burst in air knock up a considerable amount of dirt and dust if they strike dry soil; on wet soil, splashes of mud are knocked up by the shrapnel case and large fragments. Information obtained from the observation of the effect thus produced is reliable when it is observed as *over;* it is of doubtful value when observed as *short,* unless the burst is low.

If the target is silhouetted against the smoke of the burst, the latter may always be considered as over, whether the burst occurred in air or on graze. If the target is obscured by the smoke on the burst, the latter may be considered as short; but, in the case of a burst in air, the burst must be low in order to warrant this conclusion."

82. Adjustment of Direction and Distribution.—When direct laying is employed, such changes as may be necessary to bring the fire of each gun to bear upon its proportional part of the target are made at the position of the guns. In this case, each gun is adjusted individually.

When indirect laying is employed, the officer conducting the fire adjusts the lines of fire both for direction and for distribution. Add to the deflection to throw the projectile to the left; subtract to throw the projectile to the right.

To open the sheaf, increase the deflection difference algebraically; to close the sheaf, decrease the deflection difference algebraically.

To overcome observed errors, the error is measured or estimated in mils, and a corresponding correction in deflection is applied in the appropriate sense.

Adjustment of Height of Burst.—The desired height of burst in firing for adjustment with shrapnel is the height which furnishes the best facilities for observation. The Drill Regulations prescribes a 1 mil height of burst in adjusting the fire, which pertains when there are three bursts in the air and one on graze or below the target. But, as it is difficult to mentally keep track of this proportion it is easier for the beginner to adjust the burst to the visible base of the target. This is called the zero height of burst, and obtains when half the shrapnel burst in air, and half upon impact with the ground. When the shrapnel are bursting too high, or are bursting all on impact, bold changes in the appropriate sense are made in the corrector setting, until the zero height has been bracketed, and finally determined in much the same way as the range.

Theoretically, a three mil height of burst should cause greatest destruction, and, therefore, in passing to " fire for effect " from fire for adjustment, the corrector setting is raised by three mils. Artillery observers during the present war have come to the conclusion that three mils is too great, and a two mil height of burst is generally more effective.

83. Fire for Effect.—After the fire has been adjusted, " fire for effect " is opened for demolition or neutralization of the enemy. During this, observers do not relax efforts to ascertain whether or not the fire is most effective which can be brought upon the target, and cause necessary corrections toward that end to be made at the battery. It has come to be an artillery axiom, "that all fire is fire for adjustment."

Usually the same officer observes and conducts the fire, or from natural elevations which afford a view of the sector against which the fire is employed.

84. **The Methods of Fire for Effect** are, *Volley Fire, Continuous Fire,* and *Fire at Will.* "*Volley Fire* consists of the rapid discharge of a certain indicated number of rounds from all guns of the battery, or other unit, each gun fired without regard to the others. It is adapted especially to the attack of personnel. Its special characteristic is its great flexibility. The number of volleys to be fired, their range difference, the number of rounds in each volley, are all in the hands of the officer conducting the fire. By suitable manipulations of the sheaf, he may readily shift the fire from point to point of the terrain, as necessity may require, and by adapting the bursts of fire to meet the crises of action, he may utilize the ammunition to the best advantage."

85. "*Continuous Fire* is adapted especially to the demolition of material objects, and to the attack of personnel, inactive and more or less fixed in position, and protected from fire. It may be rapid or as slow as desired, thus permitting the expenditure of ammunition to be exactly to meet the requirements of the case. Exact adjustment in range is sought; but if the conditions of observation are such as to preclude this, the smallest possible bracket is obtained, and its depth 'searched' by successive changes in the range."

86. "*Fire at Will* is employed solely for the close defense of the guns. Against a slowly moving enemy, such as infantry, the fire should be commenced when he has arrived within about 350 yards of the gun; against a rapidly moving enemy, such as cavalry, when he has arrived within about 800 yards; the purpose in both cases being to establish surely a fire-swept zone through which the enemy must pass in order to reach the guns."

Employment of Fire.—"The power of artillery should not be frittered away in desultory bombardments nor upon unimportant targets. Its employment is to be adapted to the phases of an action, so that it may exert the strongest influence upon the important objectives and at the critical moments.

87. The opportunities of striking an enemy while he is vulnerable are ordinarily intermittent and brief. They occur, for example, when the enemy moves from cover to cover, or when he exposes himself in order to contend effectively against our own troops. Suddenness of action is thus often a necessity. If the action be also by surprise, its effect, especially the moral effect, is increased. The outbursts of rapid fire called for, will therefore be intermittent, depending upon the nature and phase of the combat.

88. A prolonged deliberate fire, however, may be requisite for destroying material objects; for holding a sheltered enemy under subjection, preventing his supply and re-enforcement, and precluding his effective interposition in the engagement; for searching for an enemy's reserves, etc.

89. Opportunities for using flanking and oblique fire must be sought.

90. These methods of action are made possible and effective by timely reconnaissance, by skillful selection and occupation of positions, by careful preparation for, and an efficient conduct of, fire, and by thorough co-operation between the artillery and the troops it is ordered to support."

91. "**Economy of Ammunition.**—It is made the duty of every field artillery commander to exercise constant and unremitting care to economize ammunition. Fire will be stopped at the instant the desired effect is produced; methods of fire that involve great expenditure of ammunition will not be permitted except when vitally necessary; small and unimportant targets will not be fired at; and all officers, by careful supervision and observation, will aid in reducing the amount expended to the minimum necessary to produce the required results."

92. In preparing the above, I have consulted the following authorities: The Tactical Handling of Quick-firing Field Artillery, Rouquerol; Some Notes on Artillery by

"Grenadier"; Notes and Lectures given by Capt. F. T. Austin, 2nd F. A.; Notes on Field Artillery, Capt. O. L. Spaulding, Jr., 5th F. A.; Elements of Modern Field Artillery, U. S. Service, Major Harry G. Bishop, 5th F. A.; Field Service Regulations, U. S. Army, 1914; Drill Regulations for Field Artillery, U. S. Army, 1911.

In giving these more important principles of Field Artillery, very little has been said about that of larger than 3-inch calibre, which constitutes the great bulk of the field artillery of the world. It is hoped, however, that what has been given may prove so interesting as to result in your further consideration of American Field Artillery, the development of which has been so greatly handicapped.

CHAPTER VIII

COAST ARTILLERY

1. **The defense** of a coast line involves the use of both naval and land forces.

The Naval forces include:

(a). The active fleet whose primary objective is the destruction of the enemy's fleet.

(b). Such vessels of the reserve fleet as may be assigned to the local defense of a particular part of the coast.

(c). The naval coast patrol, operating in connection with shore signal stations.

The land forces include:

(a). The Coast Artillery troops, charged with the care and operation of fixed and movable elements of the seaward and landward defense of coast fortifications, both permanent, and those established in emergency.

(b). The Coast Artillery supports, assigned for the immediate defense of batteries from small raiding parties.

(c). Such mobile army troops (Infantry, Cavalry, Field Artillery and Engineers) as may be assigned to meet and resist the landing of an enemy's fleet army, and its advance towards the fortified harbor with a view to seizing the same for a base.

2. **The personnel** of the Coast Artillery Corps consists of a Chief of Coast Artillery, on duty in the War Department, who is detailed from the Coast Artillery Corps and, while occupying the position, is a member of the General Staff; of the District Commanders and their office assistants, general officers charged with the supervision of the defense of a considerable district containing a number of harbors; and of the officers and men garrisoning the coast defenses of these various harbors.

3. **The objects** for which coast fortifications are established may be classified as follows:

(a). For the protection of important harbors and the shipping lying therein, against capture by an enemy's fleet, thereby freeing our own fleet for offensive operations.

(b). To prevent the bombardment of our largest coast cities, or the securing therefrom of a ransom on threat of bombardment.

(c). To afford safe refuge to our fleet when confronted by a superior enemy, and to cover with heavy gun fire a sufficient water area to the seaward of our harbors to enable our fleet, when emerging, to take up a favorable battle formation before going under destructive fire of a blockading fleet.

(d). To protect the naval bases established in distant seas along the routes of trade, in order that our own fleets may undertake extended offensive operations without the need of a large auxiliary fleet of colliers, repair ships and hospital ships.

4. **The limitations** of coast fortifications may be stated in brief, as follows: The seacoast guns proper are in permanent emplacements of concrete, and consequently are powerless to prevent the landing of an enemy's troops beyond the range of the guns and mortars. Unless an enemy's landing forces be held beyond bombarding range of these fortifications by a mobile force of sufficient strength, the coast fortifications attacked from the rear would fall, and the enemy's fleet be given free entrance to the harbor. This fact, which seems to minimize the value of coast fortifications and indicate the term coast defenses to be a misnomer, should be considered, however, in connection with the relative ease of disembarking troops from transports. If an enemy's fleet can steam into a harbor with good docking facilities, and land its troops and impedimenta, including heavy siege artillery, at excellent railroad terminals, the invasion of a country becomes a simple matter. On the contrary, if all strategic harbors are defended, so as to force an enemy to land his troops either on an open beach or at some anchorage of little strategic value, our opportunity is greatly increased for assembling

our mobile forces to resist such landing, or, if unable to do this, to oppose its advance toward important centres. From this it may be seen that for coast defense purposes there are needed both efficient seacoast fortifications, and an ample mobile force.

5. **A coast defense command** comprises all fortifications established for the defense of one harbor, or in certain cases, for the defense of the different entrances to the same harbor. Figs. 9 and 10 are typical sketches showing the characteristic location of coast fortifications, Fig. 9, for a rugged coast with deep natural harbors. Fig. 10, for a flat coast where the harbor consists of the lower part of a river.

There are indicated on these plates the location of batteries, search-lights, position finding stations, and mine fields. There are shown also in dotted outline the positions an enemy's fleet could take up if no fortifications were supplied, and the concentration of fire upon our own fleet leaving the harbor. In solid lines the enemy's fleet is shown in position beyond the range of the seacoast guns. A comparison of the two will indicate the importance of the third purpose of coast fortifications, as given above in paragraph 3.

6. **Warships.**—In order that the proper use of seacoast guns may be understood, it is necessary to have some knowledge of the construction of warships which are the targets of these weapons.

Warships are classified, as follows: (a) dreadnoughts, (b) battlecruisers, (c) pre-dreadnought battleships, (d) armored cruisers, (e) protected cruisers, including scout ships, (f) destroyers, (g) torpedoboats, (h) submarines, (i) coast defense ships, such as monitors, and (j) auxiliaries, such as hospital ships, colliers, supply ships, repair ships.

Classes (a) to (e) inclusive are armored as is also class (i); the remainder are unarmored.

Classes (a) to (d) and class (i) carry heavy guns (from 8 to 15 inches), in turrets, with armored ammuni-

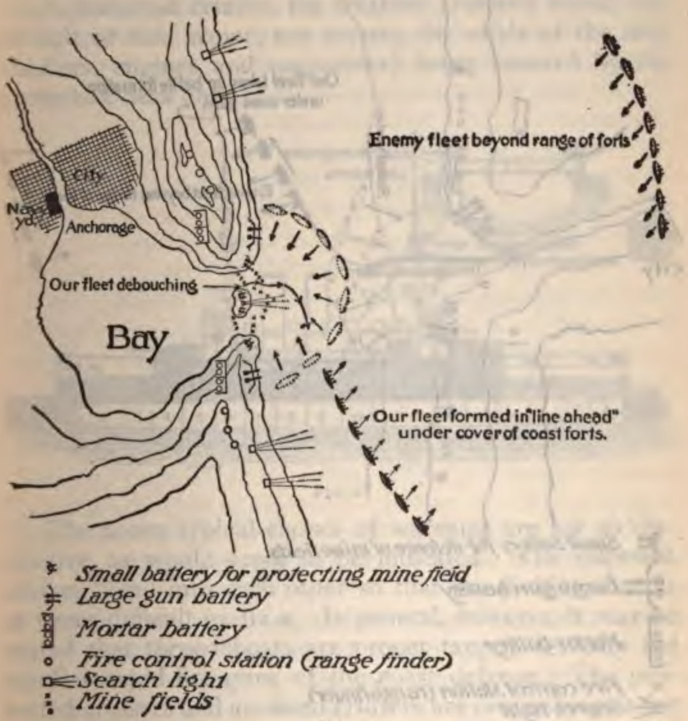
Enemy fleet beyond range of forts
City
Naval yd.
Anchorage
Our fleet debouching
Bay
Our fleet formed in "line ahead" under cover of coast forts.
Small battery for protecting mine field
Large gun battery
Mortar battery
Fire control station (range finder)
Search light
Mine fields

FIG. 9.

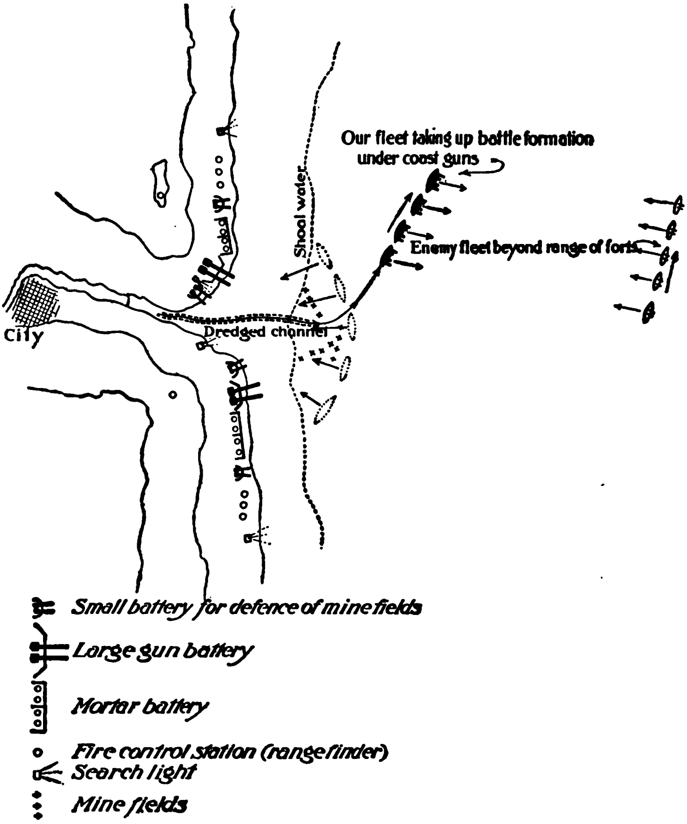
Our fleet taking up battle formation
under coast guns
Enemy fleet beyond range of forts.
Shoal water
Dredged channel
City
Small battery for defence of mine fields
Large gun battery
Mortar battery
Fire control station (range finder)
Search light
Mine fields

FIG. 10.

tion tubes leading from turret to magazine. They have smaller guns also to repel torpedoboat attacks. The other classes carry smaller guns only (6-inch to 6-pounders) protected by shields.

Fig. 11 shows the typical armor distribution of a first class battleship.

A protected cruiser, the smallest armored vessel, has no belt or side armor, nor turrets, the vitals of the ship (boilers, engines and magazines) being covered by the protective deck only.

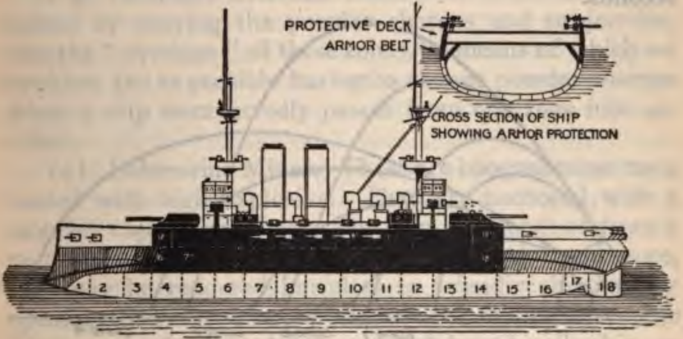

FIG. 11

The above typical classes of warships are not so distinctive as would seem to be indicated. The different classes blend into each other so that the dividing line is at times difficult to draw. In general, however, it may be stated that torpedoboats are proper targets for only the smaller rapid-fire guns of the coast defense. The protected cruisers and armored cruisers are proper targets for the medium calibre guns, and the armored cruisers and all of the more powerful vessels are proper targets for the major calibre guns and mortars.

7. **The elements of seaward defense** may be stated as follows:

(a). Direct fire guns, which are divided into (1) major calibre from 8 to 16 inches, with muzzle velocities varying from 2200 to 2500 foot-seconds and firing projectiles weighing from 300 to 2400 pounds, to ranges from 10,000 to 24,000 yards; the latest design 16-inch gun will have a range of approximately 35,000 yards; (2) intermediate calibre guns, 4.7-, 5-, and 6-inch calibre, firing projectiles from 40 to 100 pounds weight, and with muzzle velocities from 2600 to 2900 foot-seconds, with ranges from 8000 to 11,000 yards; and (3) minor calibre guns, generally of 3-inch calibre, firing projectiles of 15 pounds weight, with muzzle velocities approximating 3000 foot-seconds.

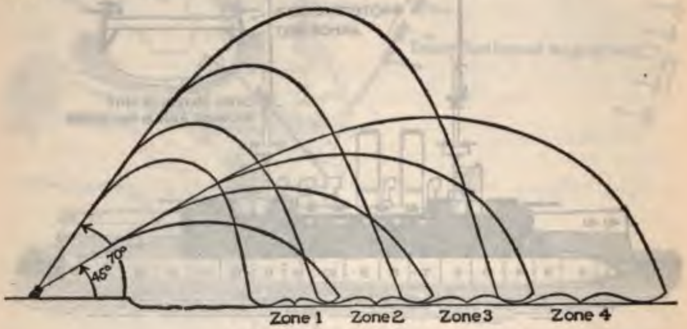

FIG. 12

The direct fire guns are designed primarily to attack the side armor of warships, and fire with angles varying from 5 degrees depression to 30 degrees elevation. The powder charge for each calibre is fixed by the velocity to be obtained, changes in range being obtained by changes in elevations. Some of the guns are mounted on disappearing carriages with a limited field of fire, others are mounted on non-disappearing carriages with all-round fire.

(b). Mortars. These differ from direct fire guns in that they are designed to attack the decks of warships, and are fired in salvos of from 2 to 8 shots. They are high angle fire weapons, firing at angles of elevation from 45 degrees to 70 degrees. The projectiles vary in weight from 700 to 2400 pounds, and the powder charges according to the range desired. They are all-round fire guns, capable of firing in any direction, and the area on which they fire is divided into zones. In general, it may be said that the longer the range the more effective is the weapon. In the inner zones the striking velocity of the projectiles is small, on account of the comparatively small distance the projectile falls after passing the summit of the trajectory. For this reason the heavier projectiles are used for the inner zones, and the lighter projectiles for the outer zones.

Fig. 12 shows a certain number of these zones, obtained by varying the powder charges and projectiles; also the "overlaps" of these zones, by means of which we avoid as far as possible having to change powder charges when a ship unexpectedly passes from one zone into another.

(c). Submarine Mines. These are buoyant mine cases loaded with high explosive. They are anchored with a mooring rope so as to maintain them at a depth of from 5 to 15 feet. They are electrically controlled from shore, and may be rendered harmless to friendly shipping by opening the controlling switches in the mining casemate. They can be fired singly when struck by a hostile ship, or in groups, if fired by the mine commander. In addition to these controlled mines there are "contact" mines which may be planted, and will explode when struck by any vessel.

There are also ground mines fired by contact; and floating contact mines, either anchored or free, but the use of these is limited in our service.

A mine field is generally laid out so that no vessel following a normal course can enter a harbor without striking at least two mines. Tortuous channels are left open for friendly vessels, which are piloted through by naval or coast defense patrol ships.

(d). Submarines. A number of coast defense submarines have been assigned to certain important harbors. The depth necessary for the operation of these vessels frequently precludes their use excepting in the approaches to a harbor. Their function would be to deter an enemy's fleet from lying too close to our shore.

Their moral effect is great, and it is certain that neither warships nor transports could anchor with safety within the steaming radius of a submarine. They carry from 4 to 8 torpedoes, which are fired from specially prepared tubes in the vessel's bow.

8. Auxiliaries.—In addition to the main elements given above there are certain auxiliaries without which no coast fortifications can be efficiently operated. They are:

(a). Position finding service. This consists of the observing stations, the communications, the plotting apparatus by means of which the location of an enemy's vessel may be accurately determined, and the fire of the seacoast guns and mortars efficiently directed. The first function of the position finding service is to locate accurately an enemy's vessels at uniform intervals of time. This is done by three methods:

First. By a long horizontal base with azimuth reading instruments at each end, azimuths being sent on the stroke of a time interval bell to a central station, known as the plotting room. Station arms on a plotting board are set to these azimuths, and their intersection marks the location of the target. A third arm located at the position of the battery on the plotting board gives the range from the target to the battery. This is known as the horizontal base system.

Second. The vertical base, by means of which a depression position finder on an elevated station reads the range and azimuth directly, the range being determined by the amount of depression given the instrument. With this system but one station arm on the plotting board, and the gun arm, are necessary.

Third. The self-contained short base instrument with prisms at its extremities one of which reflects the image in its upper portion and the other in its lower portion.

By means of a mechanism the prisms are turned so that the lower and upper images are brought into coincidence, and at the same time a range drum exhibits the range to the target.

(b). Searchlights. These are necessary for the proper operation of the position finding service at night, and for the pointing of direct fire guns. There are watchers' booths at advantageous points and communications by means of which a target once picked up by the light may be indicated to the different batteries for opening fire.

(c). Power Plants. These consist of steam, oil, and gasoline engines, and develop the power necessary for the operation of ammunition hoists, motors on gun carriages, searchlights, repair shops, and systems of communications.

(d). Mine Planters and Power Boats. These are necessary for the prompt planting of the mines at the outbreak of war. In addition to the government owned vessels built especially for mine planting, each harbor has certain tugs, such as light house tenders, selected, and equipment prepared for installation thereon; these are classed as auxiliary mine planters.

(e). Ammunition. This may be fixed, semi-fixed, or separate. Fixed ammunition is used in minor calibre guns; and the projectile, propelling charge, and primer, are assembled into one unit by means of the metallic cartridge case. In appearance it is the same as a small arms cartridge. Semi-fixed ammunition has the projectile separate, but the propelling charge and primer are assembled in a metallic cartridge case; this is the 4.7-inch gun ammunition. In separate ammunition, used for 5-inch and larger calibre guns, the projectiles are kept in shot rooms; and the powder charge, in silk bags, in hermetically sealed cans in powder rooms. The primer is inserted in the vent of the piece independently of the other operations of loading.

The projectiles used are cast iron shot or shell for target practice and for firing on land areas, and forged steel for use against war vessels. The forged steel projectiles are divided into shot and shell; the former is a misnomer as the shot is really a shell, in that it now contains a bursting charge. The only difference between the shot and shell is that the latter has a cavity accommodating a bursting charge approximately three times as large as that in the former. When these projectiles were first made, no explosive then known was sufficient in power to burst the shot, and the cavity was made merely for the purpose of obtaining a better forging. With the invention of Maximite, and later of Dunnite, for bursting charges, it was found that the shot could be exploded, and all armor piercing projectiles are now loaded with the bursting charge, and fuzed.

The reason for the two classes of armor piercing projectiles is that only at shorter ranges can the belt armor of the heavier warships be pierced. At the longer ranges only the lighter armor can be pierced, but a sufficient number of hits, combined with the racking effect of the great bursting charge, would serve to put a warship out of action. For these longer ranges, then, the shell is used with its thinner walls, greater explosive charge, and an instantaneous fuse. At the near ranges, where actual perforation of the belt armor can be obtained, the armor piercing shot is used, with its heavy walls strong enough to stand the shock of impact, and supplied with a delayed action fuse which holds up the explosion of the bursting charge until the projectile has had time to penetrate to the vitals of the vessel.

All projectiles at seacoast fortifications are kept filled with high explosive, the loading being done by the artillery personnel. A certain number are kept fuzed and ready for instant action at all times. The fuzes for these projectiles are so designed as to require the actual firing of the piece to arm them. That is, the fuze is safe in storage and transportation and only by the shock of discharge, or the rapid rotation of the projectile, can it be put in a state to explode the bursting charge. The fuze operates when the flight of the projectile is suddenly checked; and, as indicated above, that provided for the shot is delayed in operation, while that provided for the shell is instantaneous.

Projectiles for mortars are known as deck piercing projectiles. They are similar to the armor piercing shell in that they have thin walls, and a large bursting charge, but are provided with a delayed action fuze, in order that the projectile may have penetrated the decks of a warship, including the protective deck, which covers the engine rooms and magazine, before the fuze operates to explode the bursting charge.

All projectiles furnished the small calibre guns, which are intended only for unarmored or lighter armored vessels, have the characteristics of shell.

Powder supplied the coast defenses of this country is smokeless nitro-cellulose, in cylindrical perforated grains. Weight of charge and size of grains vary with the calibre of the piece in guns, and with the zone in mortars.

9. **The responsibility** for the efficient preparation and operation of the coast fortifications is divided as follows:

The Chief of Coast Artillery is responsible for the final decision as to location of fortifications, character of armament, distribution of ammunition and personnel, procurement of supplies, and methods of instruction.

The Department Commander is, in general, responsible for the preparation for defense of all elements within the limits of his department.

The District Commander is responsible for tactical training of the coast artillery troops in all coast defenses within the limits of his district.

The Coast Defense Commander is immediately responsible for the defense of the harbor to which he is assigned. He prepares all plans to resist attacks from the sea, and from small raiding forces on land. In addition to his tactical duties, he is the administrative officer in all matters of supply and discipline within the limits of his coast defense.

The Fort Commander is responsible for the efficient training of all personnel assigned to his fort, and for their immediate discipline. In action, he fights his command, either in coöperation with other forts, under direction of the Coast Defense Commander, or as a separate unit.

The Fire Commander is in charge of two or more batteries. He is immediately responsible for the efficiency of the personnel, and for the condition and efficiency of the matériel.

The Mine Commander has the same responsibility with respect to the mine system, and the batteries assigned for their protection, as the fire commander has for his fire command.

The Battery Commander is responsible for the training of all personnel assigned to his battery, and for the condition of the matériel. In addition he is an administrative officer, and charged with the discipline and supply of his company. He has as his assistants, two officers, one assigned as range officer who is immediately responsible for the training of the fire control section of the battery; and another as emplacement officer, who is immediately responsible for the training of the gun crews. These officers assist him also in his administrative duties. Each gun and each mortar pit has a gun commander, usually a sergeant, who is in immediate charge of the emplacement, and the training of the gun crew. The company commander of a company assigned to the service of mines, is responsible for the proper performance of such duties as may be assigned that company by the mine commander. He has also the administrative duties of a company commander. The commanding officers of mine planters are generally lieutenants of mine companies.

10. **Enlisted Specialists.**—In addition to the coast artillery personnel assigned to companies and to the headquarters staff, there are the following enlisted specialists, who work under the immediate supervision of the artillery engineer:

Master electricians, and the electrician sergeants, in charge of all electrical installation, including searchlights, telephones, subterranean and under-water cables.

The engineers, in charge of the various power plants; and the firemen, who assist them.

The master gunners, who make surveys, and do the draughting work for the coast defense to which assigned.

These positions may be filled by men of the necessary technical training, and without previous military experience, with the following modifications:

Master electricians and electrical sergeants. Any civilian thoroughly familiar with electrical apparatus and electrical principles can perform all the duties usually assigned these specialists, except the preparation of War Department records and forms, and these any intelligent man can readily learn.

Engineers. Any civilian thoroughly familiar with steam, oil or gasolene engines.

Firemen. Any well instructed civilian fireman.

Master Gunner. The duties performed by master gunners once required a knowledge of the coast artillery in all its aspects. However, a first-class draughtsman and surveyor can perform the work now assigned to the master gunner.

In addition to the above there are the following positions for which intelligent men could be trained in one week or less: readers in observing stations; ammunition detachments of gun or mortar batteries, excepting the chiefs of the various details, and the men who operate the ammunition hoist; members of the gun detachment who receive the ammunnition on the gun platform and turn it over to the truck detail; elevating details, with the exception of the range setter; powder serving detail. All other duties required of coast artillerymen need a considerable period of training; and in general, it must be said that the longer the same men work together the more efficient will be the results.

11. Elements of the Landward Defense.—The troops for the defense of seacoast fortifications on the land side consist of the coast artillery supports, and of field armies assigned for the defense of a specified section in the coast lines.

The coast artillery supports are troops of the mobile army, usually consisting of infantry and field artillery, assigned to the immediate defense of the batteries, and encamped within the fortifications. They establish defensive lines, consisting of intrenchments, entanglements, and the preparation of advantageous buildings for defense. Their duty is to protect the batteries from capture or damage by a small raiding force, which might be landed under cover of darkness or fog within a few hours march of the coast fortifications, with view to doing as much damage as possible in a few hours and then retiring. They are under the command of the coast defense commander. The coast artillery personnel, when not actually operating their seacoast guns, take part in this landward defense. For this purpose in part, they are trained in the use of field artillery pieces and machine guns, and also to operate as infantry.

The Field Army.—History shows that an attack from the sea on a strongly fortified harbor is almost certain to result in failure; and that successful operations against such harbors have almost invariably been due to combined land and sea attacks, the land attack being the decisive feature. It is evident, therefore, that without a field army to oppose the advance of an enemy which might be landed in force beyond the range of the seacoast guns of any fortified harbor, the fortifications can accomplish nothing to protect the harbor from ultimate capture. Its sole benefit under these conditions would be the delay, while the enemy landed his troops and impedimenta at an unfavorable site.

It is necessary, therefore, to oppose the enemy with a mobile force equal or superior in strength. In general, this is accomplished by concentrating at strategic points an army somewhat larger than would be required to defend any one fortified harbor; this force sending out detached bodies to resist enemies at all probable landing places. Should serious attempt to land be made at any point, the detached force guarding that point would be reinforced as rapidly as possible. Should the defenders be unable to prevent the landing, and unable to resist the advance of the enemy towards his objective, there arises the matter for decision as to whether the defending force is to resist to extremity, and permit itself to be besieged in the defenses surrounding the harbor, or whether they are merely to delay the enemy as long as possible, and then abandon the objective and fall back to some other position. The value of the objective to the army and to the enemy, the possibility of reinforcements, and the total strength of the military resources of the nation would be the determining factors in such a case.

THE COAST DEFENSES IN ACTION.

12. Let us imagine ourselves in the fortifications of a harbor in war time.

It is night, and except for a few outlying searchlights, it would appear that all are asleep. The majority are; but in concealed watchers' booths beyond the searchlights, lie men with tense nerves following the beams of light as they sweep back and forth slowly searching every portion of the water area. The watchers are equipped with powerful night glasses; telephone head sets are strapped to their heads. Their reliefs, wrapped in blankets, sleep beside them.

At each light are one or more operators, also equipped with head sets keeping them in constant telephone communication with watchers and with fire commanders. The electric control of the lights may fail. The fire commander must then direct its beam by word of command, and the operator control its movements by hand.

In each fire control station there is one man awake at the range finder, keeping it in constant adjustment for changes in tide and refraction. These, too, are following the movements of the lights through their 30-power telescopes. The remaining personnel are asleep on the floor.

In the plotting room of each battery one man is awake. From time to time data comes to him from the meteorological station. He keeps the range correction board set to give the proper correction to be applied to the true range for variation from the normal of muzzle velocity, density of the air, strength of the wind and tide. In every power plant one or more men are caring for the engines furnishing electric current for search lights, battery lights, and gun carriages.

A staff officer is on the alert at the coast defense commander's, and at each fort commander's, station. At the first, the radio operator ceaselessly adjusts his receiver to catch the least indication from friendly patrol boat, or enemy fleet.

"**Number Two, search right!**" calls a watcher, "**Steady! Follow.**"

"Dreadnought in beam of Number Two!"

Within ten seconds of the transmission of this message, the interrupter in each fire command station clatters the alarm to each emplacement and station. The men swarm from the galleries of the batteries, and man the pieces.

As the fire control sections take stations at range finders, telephones, plotting boards and computing devices they hear dimly: "**Battery Blank, with armor piercing shell, Load!**" Each instrument is tested and range officers report, "Range section in order."

A minute, possibly a minute and a half, has passed. Number Two light still follows the target.

"**Number Three in Action!**" calls the fort commander; and a dazzling beam from a heretofore occulted searchlight cuts the darkness.

"Cover Number Two!" Light Number Three lowers, sweeps sideways, and adds its beam to Number Two's.

"First fire command! Target Number Three, Commence Firing!"

"Number Two Search right! Steady! Follow!"

Number Two light has picked up the second ship in column.

"Number Four in action! Cover Number Two! Second fire command! Target in Number Four, Commence Firing!"

Ship after ship is picked up and a light assigned it, the fort commander exercising the greatest care that he crosses no beams, for this will blanket everything beyond the intersection.

In each fire command, the commander sends his orders to his batteries. Observers at each base end begin to track the target. At 15-second intervals, marked by the stroke of a bell in each station, the azimuth (angular direction) of the target is telephoned to the plotting room. The station arms are set to these azimuths, their intersection marks the position of the target at that instant. The plotter lays the gun arm (centred over the directing point of the battery) to the intersection. The range to the ship from the guns is read. In three observations (45 seconds) her rate of travel is ascertained, and in four observations (1 minute) all corrections are applied. Thereafter a continuous stream of range data goes to the guns, and the emplacements quiver with the shock of discharge as the heavy projectiles are hurled on their mission of destruction.

But the ships are not idle. Broadsides flash, and columns of flame arise around the searchlights. The smoke obscures the rear vessels, confusing the observers and gun pointers ashore. And the enemy is approaching at the rate of 700 yards per minute.

"Third fire command! Target in Number Three! Commence firing!"

Anticipating the necessity, the fire commander has been having the leading ships tracked, and is ready. With a crash eight mortars, fired by electricity, send their 1070-pound projectiles up. Seconds pass, for they will not reach the summit of their trajectory for nearly half a minute. The few who are not intensely occupied, hold their breaths and count their heart beats, oblivious of the roaring of the great guns and the detonation of shell. In fifty seconds there is a blinding glare, the salvo has reached its target, the leading ship breaks in two as her magazines explode, and the second ship turns barely in time to avoid striking the sinking wreck.

Number Two light is shifted to the second ship. Number Three to the third, and so on.

In the mining casemate below ground, where the noise of battle is so dimmed as to be almost inaudible, a sergeant quietly closes switch after switch. Instantly every mine in the group of nineteen controlled by each switch is electrified and ready to explode if struck.

Close inshore, taking advantage of the confusion of the main engagement, a flotilla of torpedo boats dashes by. At short range their rapid-fire guns open on the search lights. One light is struck, and then the 6-inch and 3-inch guns ashore awake, and as they begin to find the range, the destroyers turn and race outward, feeding their furnaces with an excess of oil, their funnels pouring out a dense heavy smoke that soon covers the water and makes further firing useless.

The leading ship reaches the mine field. A mine tears a gigantic hole in her port bow; but she forges ahead, and strikes the second line. Here the wreck of her bow is completed, and she turns, settling by the head, and dashes for shoal water.

But the way through the mine field is opened. At the gap rush the balance of the attacking fleet, some listing heavily, others lacking funnels and military masts.

"**Battery commanders action!**" calls the fort commander. His work is done. The range is now almost point blank. Each battery commander now fights his guns against any ship he thinks best. Emplacements are swept by a hail of small explosive shells, but the entire armament of the defenses is concentrated upon the leading ships, at ranges where a miss is almost an impossibility. On the nerve and training of the individual man the final result rests; for in five minutes more the enemy will be sunk, or the harbor captured.

CHAPTER IX

THE ENGINEER CORPS

1. THE Engineers are auxiliary troops, and in the organization of the fighting forces of an army, appear first in the infantry division; each division containing in its composition one battalion of pioneers, with a senior engineer officer on the staff of the division commander.

2. In the larger field, the organization and control of the national resources, movement of troops and supplies to meet the demands of policy and strategy, the engineer finds himself playing a vital part in war. For these operations, adequate preparation is found in peace time, in the training and experience derived from the various phases of engineering as practiced in civil life. In fact, there is no peace time training better suited to develop the powers and qualifications essential to successful military leadership, than that obtained by the young civil engineer—practical knowledge of camp sanitation and care of men in the field; experience in the control of men, and uniting them all in the determined execution of his will; and best of all, the development of his own qualities of initiative, resourcefulness, and unconquerable perseverance, in meeting and overcoming the forces of nature.

3. With the fighting troops, however, the engineer must have a specialized knowledge, particularly of the principles controlling the uses of artificial cover for our men, of obstructions for the enemy, and of all the details of their location and construction. These operations are discussed in "Field Engineering," and, of vital importance to the military engineer, will be the sole subject of this chapter.

4. Under modern fire conditions it is accepted that troops cannot long exist without cover, and this means that those who may not have natural cover, must "dig in," and make their own. And where it is intended to

maintain the position for any length of time, the construction of this cover in all its ramifications, is a matter of considerable art, to be explained in detail.

5. Since digging in may be vital for any group of individuals, as well as sometimes necessary for the whole command, the proper equipment of fighting troops, infantry, cavalry, and field artillery, includes tools to make this immediately possible. This means that the infantryman must carry his intrenching tool on his person as part of his fighting equipment, and that the cavalryman must do the same for dismounted action as infantry. And, as experience in battle brings greater wisdom, these men grumble less and less at the additional load. In fact, it has been reported that officers in Europe have been found discarding their swords, and gladly carrying shovels instead.

6. In addition to these tools on the person, a supply is carried in the "combat wagon" accompanying each battalion and squadron, immediately available for distribution and use when needed. And behind this, in the engineer train of each division, are nine wagons, one for each infantry regiment, loaded with picks and shovels, to be brought up and used when conditions warrant. While these provisions, each for its appropriate phase of action, do not furnish all the tools that could be used to advantage in the emergency, they are as numerous and as efficient as is permitted by the requirement for the mobility of the troops.

7. And in the more permanent works, where it is possible to bring up the engineer train wagons, and where but two battalions of each regiment go into the firing line with the third in reserve, it is possible by proper distribution of all available tools, to supply each squad of eight men in the firing line with seven digging tools. Cutting tools are at hand, for the use of the troops assigned to the work of preparing the foreground of position occupied.

8. It is well to caution all officers as to the necessity for watching out carefully that these tools are not mis-

placed, but each returned promptly and surely to its appropriate place. For life itself may later depend on having these tools at hand, properly disposed, ready for quick systematic distribution, as the conditions demand.

9. We now proceed to a consideration of the development of a defensive position, which the commander has decided to intrench and hold. In the earlier phases of this development, the first concern of the commander is to secure the key points on the line to be defended, the possession of which must be denied to the enemy. The defensive line, therefore, is at first made up of a number of defensively organized areas, so located with respect to each other as to be able to support each other by covering the intervals between with the cross fire of small arms, and which, taken all together, form a line athwart the probable line of advance of the enemy.

10. These defensively organized areas are called supporting points. They take the place of the redoubts and forts of former days, but instead of being closed or semi-inclosed works, a supporting point now consists of a group of fire, cover, and communicating trenches, properly disposed on the area to be defended to permit of fire to the front and flanks, with the greatest possible degree of concealment and cover for the garrison. The garrison of a supporting point is preferably a tactical unit, generally a battalion in our service, and the supporting point is constructed ordinarily by the unit that is to occupy it. By this grouping of the trenches in our initial dispositions, better tactical control is secured, the several units of the garrison being under the immediate observation of the commander, and the amount of digging required to secure cover, and covered communication, is reduced.

11. Intervals between supporting points are covered by cross fire from flank trenches. In favorable terrain this interval may be as great as 800 or 1000 yards, at first. Later developments may require that supporting points be connected by intermediate trenches, and finally a practically continuous line of fire trenches may result.

12. Figure 13 shows diagrammatically a possible distribution of a regiment on taking up a defensive position, the regiment being part of a larger command. Two battalion supporting points are organized, with one battalion in reserve, under natural cover. Each battalion on line has three companies in fire trenches, and one in support.

With this arrangement, a supporting point may actually occupy from 300 to 500 yards of front, depending on the disposition of the fire trenches, and the intervals between supporting points may be from 500 to 800 yards. Thus the total front covered by the fire of a supporting point may be from 800 to 1300 yards. On ordinary terrain it is considered safe to estimate ½ mile (880 yards) of front for each battalion supporting point. Thus a regiment will cover 1 mile of front, one battalion being in reserve, a brigade will cover two miles of front if both regimental and brigade reserves are held out, and a division, 4 miles of front if regimental, brigade and division reserves are provided.

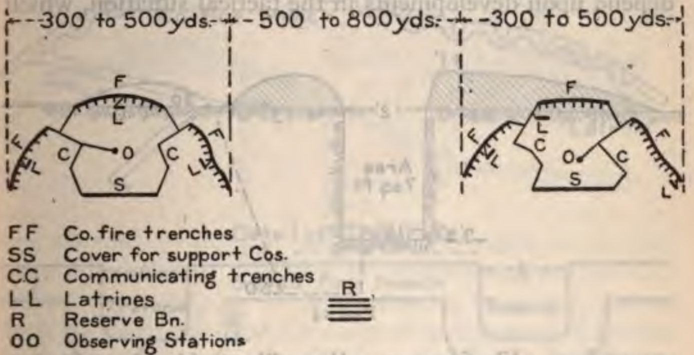

FIG. 13

It is to be understood that this distribution is appropriate to the first phase of the occupation of a defensive position. The fire that can be developed from such an arrangement of the trenches is considered sufficient to repulse an ordinary frontal attack of a force two or three times as strong as the defenders. Field fortifications permit us to hold a given front with fewer men than would otherwise be possible. Indeed the most skillful use of field fortifications is that which allows a commander to hold safely the maximum front with his command, or to hold a given front with the smallest possible number of men intrenched, thereby rendering available a large general reserve for offensive action elsewhere.

13. In considering the details of the organization of a supporting point, we will confine ourselves essentially to those works that can be carried out in the first three or four hours after the decision to intrench has been reached. The subsequent elaborations of the defensive works will depend upon developments in the tactical situation, which cannot be readily foreseen. We will consider first the fire trenches, then the works immediately behind them, cover for supports, communicating trenches, etc., and then the work on the foreground in front of the fire trenches, clearing obstacles, etc., it being understood that with proper organization and control work on all of these features will go on simultaneously.

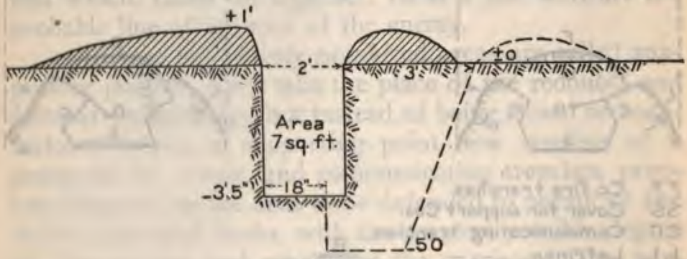

Fig. 14

14. The fire trenches are dug by the companies that are to occupy them, and unless actually under fire, the effort will be to secure a narrow trench that will permit of firing in the standing position. Figure 14 shows a cross section of the simplest form of standing trench, 2 feet wide, 3½ feet deep, sides vertical (which is possible *in ordinary soil*), parapet 1 foot high.

Some earth is thrown out to the rear, forming a low "parados" to give protection against the back blast of high explosive shells. Later this trench may be widened and deepened, as indicated by dotted lines, to facilitate communication, and improve the cover afforded—but at first only the smaller trench can be dug.

15. In plan, a fire trench is not straight, but conforms generally to the contour of the ground. Also it must be "traversed." The traverses form a series of jogs in the trace of the trench, their purpose being to intercept enfilade fire, and localize the effect of a shell or shrapnel striking in the trench. Formerly only those trenches that were likely to be subject to an enfilade fire were traversed, but with the increased effectiveness of artillery fire, it has been found desirable to provide traverses in all fire trenches. Traverses should be spaced 5 to 8 yards apart, and are now preferably made 6 feet thick; and they should extend 2 feet in rear of the back edge of the fire trench. Figure 15 gives an idea of the plan of a narrow standing traversed trench, for a company of 16 squads. If two feet of parapet length are allowed for each rifle, and the traverses are 6 feet thick, this trench will be about 115 yards in length.

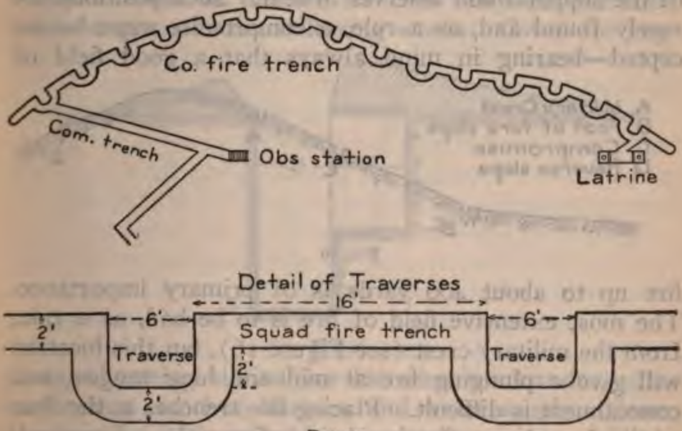

FIG. 15

Riflemen cannot fire readily if spaced less than two feet per rifle. Three or four feet would be preferable, but this would increase the amount of digging required to get cover for all, so but two feet per man are provided at first. Later, when additional fire trenches have been provided, 4 men may be assigned to the 16 foot section of fire trench between traverses.

16. Considering the subject of the location of fire trenches, the best site for a trench is one from which the best fire effect can be obtained in combination with complete concealment of the trench, and of the movements of the supports and reserves in rear. Such positions are rarely found and, as a rule, a compromise must be accepted—bearing in mind always that a good field of fire up to about 400 yards is of primary importance. The most extensive field of fire is to be had, as a rule, from the military crest (see Figure 16), but this location will give a plunging fire at mid and long ranges, and concealment is difficult. Placing fire trenches at the foot of the fore slope, effective grazing fire and good concealment may often be secured, but communication is difficult. An intermediate compromise position is often preferable.

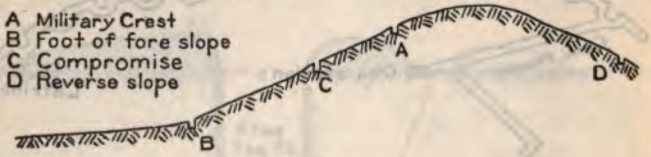

Fig. 16

The desirability of including within our own lines high ground from which our artillery fire can be observed and controlled, leads generally to a location of the fire trenches on the fore slope. In the later stages of the development of an intrenched position, when the enemy has had time to bring up all of his artillery, and when we have had time to construct effective obstacles, concealment from observation by the enemy becomes a controlling factor in the location of fire trenches, more important than our own field of fire. This may lead to the location of fire trenches on the reverse slope, with a field of fire of but 50 to 100 yards. In this case a good obstacle is imperative. In the earlier phase of the operation which we have been discussing, the fore slope location is considered preferable.

All trenches should be made as inconspicuous as possible, the effort being to change the natural appearance of the ground as little as possible. This is difficult in hasty work, particularly as observation from the ground and the air must be guarded against.

17. In rear of the fire trenches early consideration must be given to the following works: Cover for supports, observing station for battalion commander, communicating trenches, latrines, and water supply. Cover for dressing stations and kitchens may receive consideration later. Supports will ordinarily provide cover for themselves while the fire trenches are being dug, preferably within 50 or 75 yards of the fire trenches, natural cover being taken advantage of if available. They may be located so as to permit of their firing, in which case they would dig a fire trench. If no natural cover exists, work will be commenced on a cover trench similar in cross section to the fire trench. This may be improved later to provide cover sitting (Fig. 17). By giving cover trenches a wavy trace, necessity for traverses is obviated.

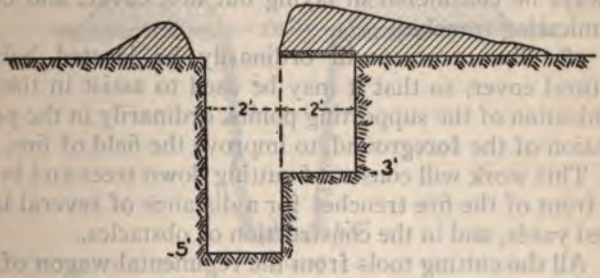

FIG. 17

An observing station for the battalion commander should be built simultaneously with the fire and cover trenches by a detail from the support company.

The fire and cover trenches being completed, each company will provide itself with a latrine, offset from its trench. This is about all that can be done in the first two or three hours of work. Communicating trenches between support and fire trenches must next receive consideration, both support and fire line companies being employed in the construction. Fig. 18 shows cross section of a communicating trench. It may not be practicable to secure full depth at first. In trace, communication trenches are either zigzag with straight lengths of not over 15 yards, or wavy.

The drainage of all trenches is important and must always be considered in laying out fire, cover, and communicating trenches.

18. The reserve will ordinarily be located behind natural cover, so that it may be used to assist in the organization of the supporting points, ordinarily in the preparation of the foreground, to improve the field of fire.

This work will consist of cutting down trees and brush in front of the fire trenches for a distance of several hundred yards, and in the construction of obstacles.

All the cutting tools from the regimental wagon of the engineer train will be turned over to the working parties from the reserve for this work and the brush and trees cut should be formed into an obstacle. It should be remembered that clearing work takes a good deal of time, particularly if trees are large. If time is short, fire trenches should not, therefore, be given a location which requires a large amount of clearing to give an effective field of fire.

The best obstacle is made of barbed wire, and requires some time for its construction. Existing barbed wire fences may be improved as obstacles, if extra wire is available. Obstacles are particularly necessary where the field of fire is short. In fact, a field of fire is to be regarded not as a distance but as a time interval.

19. In the deliberate occupation of a defensive position, the ground can be carefully studied by the commander and his staff officers, particularly engineers, and all of the details of the defensive works can be carefully planned and their execution supervised. Complete reconnaissance of the position to be occupied is desirable. In the usual course of field operations, however, only a few hours may be available for strengthening a position, and it is important that the men be put to work as soon as possible. Commanders of the larger units should precede their commands to the position and make a hasty reconnaissance of the ground while the troops are coming up, the effort being to permit the several units to move without check or delay to their positions on the defensive line.

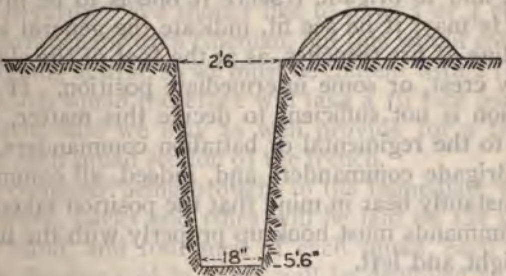

FIG. 18

To accomplish this, commanders must delegate many details to their subordinates, each commander confining his reconnaissance and instructions to the essential points necessary to move the several units of his command to their respective places on the defensive line, where they may be put to work promptly. Thus each commander, from the division to the company commander, has his part to play in the occupation and organization of a defensive position, and it is evident that best results can only be secured when the officers of all arms and grades are familiar with the principles and practice of field fortification.

20. Let us consider briefly the functions and duties of the several commanders in a brigade ordered to take up a defensive position, the brigade being part of a larger command. The brigade commander may expect to receive from the division commander instructions or orders covering essentially the following points: a. The general line to be occupied. b. The extent of front to be covered by his brigade. c. Whether or not a brigade reserve is to be held out. With this information, and from such inspection of the ground as he can make without delaying the game, the brigade commander issues his instructions to his regimental commanders. If the latter have been able by this time to join the brigade commander on the position, much time will be saved. The brigade commander's instructions cover essentially the following points:

a. Assignment of regiments to their respective sectors of line, and to brigade reserve if one is to be provided.

b. He may, if he see fit, indicate the general location of the line of fire trenches, as at the foot of the slope, the military crest, or some intermediate position. If his information is not sufficient to decide this matter, it may be left to the regimental or battalion commanders.

c. Brigade commanders and, indeed, all commanders will constantly bear in mind that the position taken up by their commands must hook up properly with the units on their right and left.

Regimental commanders, continuing the reconnaissance in more detail, will assign their battalions to positions on the line and in reserve, indicating the number and general location of the supporting points to be prepared. They will also indicate the desired distribution of tools from regimental wagon of engineer train, and the particular work to be done by the regimental reserve.

The details of the organization of the supporting points are left to the battalion commanders, who assign their companies to fire trenches and supports, and supervise the adjustment of the whole defensive group to the ground, so as to develop a strong frontal fire and to cover the intervals between adjacent supporting points.

Company commanders make the final precise location of fire trenches, and deploy their companies for digging.

Thus, if each commander exercises his proper functions in succession, the ultimate result becomes a composite work to which each has contributed his part, and if the commanders are alert and know their business, there need be no loss of time in getting the men to work.

21. Let us now consider the time required to secure a fire trench of the kind above described, and how best to deploy a company to dig it. Our minimum requirement is a narrow trench, say 2 feet wide and 3½ feet deep, with straight sides, if the earth will stand, the excavated earth being thrown out front and rear to form a parapet one foot high and at least 3½ feet thick and a light parados about 1 foot high. We need traverses 6 feet thick, at intervals of 5 or 6 yards. We should like to have 3 or 4 running feet of parapet for each rifleman, but this would entail too much digging at first, so we must be content with 2 feet per man. Each squad therefore will take a 16 foot length of fire trench—and we may as well provide for a traverse between each squad section of the trench.

The company being brought to the immediate vicinity of the work, packs and rifles will be laid on the ground near at hand, and four men of each squad, each with a portable digging tool in hand, will be deployed at 4 foot intervals on the line to be intrenched, an interval of 2 yards being left between squad lengths of trench to provide for the traverses. The final location of the trench is now made by shifting this line backward and forward. The 4 foot interval between diggers can be secured by having each of the four men with tools extend the right arm to touch the shoulder of the man on his right; the 6 foot interval for the traverses being covered by a fifth man with both arms extended.

The line being adjusted, if each digger will now drive his tool in the ground between his feet, the front cutting line of the trench will be established, and the task of each digger will be indicated, lying between his own tool and that of his neighbor on the right. Work will be immediately commenced upon the 16 foot sections of squad trenches, leaving the connections around the traverses to be developed later. The four diggers may be relieved at intervals by the other four men of the squad. As soon as the park tools from the regimental wagon of the engineer train are distributed, work on the connections around the traverses will be undertaken. Ordinarily two park shovels and one pick mattock will be available for each squad, so that when the park tools come up seven men of each squad may be kept at work digging.

The time required for the construction of a company fire trench of the kind indicated is subject of course to wide variations, depending upon the nature of the soil, the skill and spirit of the diggers, and the state of the weather. With average skill and in medium soil, using the tools as above, it should be a matter of from 2 to 2½ hours of actual digging. During this time work on the foreground, and the rear ground, has been going on. It is safe to say therefore that in three hours a well trained command should be able to intrench itself in a manner to repel ordinary open attack of a force two or three times its strength.

22. The need for hasty works under present day conditions is so frequent and so extensive, that their construction cannot be delegated, as was formerly the case, to the engineers, whose numbers would be quite inadequate, but must be performed by the troops who are to defend them. There are, however, many classes of works required in the organization of a position, which demand operations for which the other troops are neither trained nor equipped, and which can be best carried out by the technical troops. Of this character are the following:

a. Demolitions, calling for the use of high explosives in clearing the foreground, and obstructing the enemy's communications.

b. Cutting down heavy timber, for which the infantry tools are not adapted.

c. Assisting in the organization of specially important supporting points, involving the employment of artificial obstacles and substantial covers.

d. Providing communications, especially bridges, in *rear of and along* the position.

e. Executing special constructions such as observation stations, and shelters for the wounded.

f. Constructing works on the second line of defense, if such should be contemplated.

In general, engineers will be employed on works of general interest not definitely assignable to other combat units, and on work requiring special technical skill and tools.

23. Since the proportion of engineers is small, any attempt to apportion them uniformly over an extended front must lead to such a scattering of personnel and matériel as to preclude any practical results. Undue subdivisions will render supervision by engineer officers impossible, and will complicate the subsistence and administration of the engineer units. All considerations, therefore, point to the employment of the engineers in tactical units, viz., companies.

When a reconnaissance precedes the actual organization of a position, the senior engineer officer will be able to furnish advice as to the best employment of the engineer troops to carry out the intentions of the commander, and this would naturally be followed in assigning the engineer troops. Where no such reconnaissance can be made, assignment of engineers will have to be made more or less arbitrarily, and their employment decided by the commander of units to which they may be attached. There being three pioneer companies to each individual battalion, one company may be assigned to each brigade for execution of work deemed necessary by the brigade commanders.

24. The engineer troops can render valuable services also on the offensive. In this case they accompany the leading troops of the attack, equipped with demolition and pioneer tools, and high explosives, prepared to overcome or remove any obstacles interfering with the advance of the infantry, and to assist in the organization of captured points. To secure the best results from the employment of engineer troops on the battlefield, it is incumbent that all combat officers should understand their functions, capacity for executing work; and also their limitations.

CHAPTER X

THE SIGNAL CORPS

THIS Corps is of the Staff—and is as essential to the conduct of a modern army as the telephone service to the conduct of an extensive business in a great city. Its function is to supply the "nerve channels" that allow communication between the controlling mind and all the ramifications of the intricate machine represented by modern armies in the theatre of war.

It has always been true that timely information of the forces and intentions of the enemy is absolutely essential to a commander's successful employment of strategy and tactics. Our air craft have made so sure the getting of this information in the larger forces, and our use of electricity has made its delivery at headquarters, and the dissemination of resultant orders, so quick and sure, that it is true to-day, as never before, that this phase of military endeavor has attained a prominence which justifies the statement that it has become a major factor in the conduct of war.

The rapid advances of science since the Civil War, which ushered into military use, railroads, telegraph, balloons, and the breech loading rifle, have been so great as to require the services of many trained specialists in the scientific departments of the staff.

The science of war to-day comprises the use of chemical, mechanical, electrical, and physical devices, of great variety. These things are standardized, but only within certain limits, as efficiency, so necessary to defeat the enemy, is ever keeping pace with progress, and progress is ever extracting from the limitless fields of ingenuity and invention new things which are offered for trial and test.

Organization.—With the fighting forces, the signal troops first appear attached to the infantry division, and there consist of a field battalion and an aero squadron.

Attached to the commanding general's staff, is a senior signal officer, through whom the wishes of the general, and the work of the signal troops, are harmonized. He also acts as censor at headquarters, is in charge of the code and cipher, and, when the military are in charge of commercial telegraph and telephone lines, as will almost always be the case when an army is operating in foreign territory, he arranges for the transmission of commercial messages over any of the lines. These duties make him one of the important levers through which the general works.

A field battalion consists of three companies commanded by a major, each company having its own special work. One is a wire company, another an outpost company, and the third a radio company.

The wire company is equipped with some twenty miles of insulated wire wound on reel carts, which makes it possible to lay lines as quickly as the fastest troops can move. The specific work of this organization is to provide telegraphic or telephonic lines of communication from the Division Commander's headquarters, wherever he may be to the three brigade commanders, often many miles in front, thus keeping them in touch with their chief.

From each brigade commander forward to the colonels of the regiments, this work is taken up by the outpost company. We are now well within the range of flying bullets, and the equipment of the wire companies gives way to much lighter material to permit the signal men to carry it on their persons, as they creep over the ground, or hurry along through the saps and trenches, unwinding a very thin wire from a breast reel as they go. Their instrument of communication is the service buzzer, a portable telegraph and telephone instrument combined in one. This instrument was designed in our signal corps, and through many improvements, has been developed to a very satisfactory state. It is bound in leather, and not much bigger than a cigar box. This compact form makes it very easy for the signal corps operator to keep his instrument attached to his person, as the exigencies of battle move him from place to place. The telegraph cannot be drowned out by the roar of battle, and affords means for the transmission of messages and orders with unfailing accuracy, which the telephone cannot equal. The telephone, on the other hand, permits the introduction of the personal equation, and is particularly valuable for persons of high rank who wish to transmit views and exchange ideas. The personnel of the wire and outpost companies must therefore be trained telephone as well as telegraph operators.

The radio company supplements the wire companies, accompanies any units that may be detached from the division, such as the cavalry, engaged in extended operations. It renders a general variety of service in all cases where the distances are too great for the wire units to cover, or where physical considerations, such as intervening bodies of water, make the use of wire inexpedient. The radio equipment consists of four pack sections, and two wheel radio sets. These latter have a larger communicating radius than the pack sets, and are used for communicating with other divisions, the headquarters of superior commanders, and bases in the rear.

Telegraph Battalions.—Behind the divisions are telegraph battalions, composed of telegraph companies. These work from the army bases up to where the field battalions begin, and install a semi-permanent equipment. We now see the lines erected on light lance poles, and provisions made for a larger volume of business. As we go on back to the base, we come in contact with the signal service at large, where work of any magnitude may be in operation, depending upon the character of the war. In the present war in Europe one sees not only provinces and sections, but entire kingdoms, occupied by conquering armies. Such pictures should be sufficient to show the magnitude of the work falling to the signal service. The purely commercial cable system to Alaska was not only designed and constructed by the signal corps, but has been operated by it for the past dozen years, and will undoubtedly continue to be for a considerable time, until Alaska becomes more populated, since the system is not sufficiently remunerative to attract commercial enterprise.

As war is but national policy carried on by other than normal means, it follows that the duties of the military as an arm of the government are but to function when other means fail. It retires when the normal branches of the government again become capable of carrying out their duties. And so, in the Philippines, many thousands of land and cable lines erected by the Signal Corps of the Army, and charged to military appropriations, were turned over to the established Philippine government, and the cost merely charged off.

Air Craft.—The aero squadron attached to a division consists of three companies. We have at present a total of 12 machines. Eight are of the reconnaissance type, and two of the pursuit and combat type. This service is very new, and we are modelling very much along the lines brought out by the war developments in Europe.

Air craft are now employed for strategical and tactical reconnaissance, and the prevention of reconnaissance by the enemy's air craft; for the direction and control of fire of the artillery; for the destruction of the enemy's personnel and matériel by explosive and incendiary missiles and other means; and for the rapid transportation of superior commanding officers.

The value of air craft, and especially of the aeroplane, in the field of reconnaissance, has been proved beyond question. Whatever may be the opinions of military men as regards the offensive importance of air craft, and the present standing of the dirigible, there is no longer a question as to the value of the aeroplane in rapid and long-range reconnaissance work, and of its power to secure and to transmit by radio, visual signal, or direct-flight, information of the utmost importance to armies in the field. So true is this that it seems probable the aeroplane and, to some smaller degree, all aircraft, have altered not the principles of strategy, which are immutable, but the theory and application of grand tactics. It now appears that the actual game of war is played openly with cards laid on the table, and opportunity no longer exists for inference as to concealed movements, perhaps not even for the exercise of the high military quality of anticipation of the movements of the adversary; while the possibility of brilliant and unexpected blows by enterprising commanders has been largely eliminated. The air craft sees and indicates the larger operations of war, and points out to the slowly moving men on the ground not only the object to be attacked or defended, but to reconnaissance troops, especially the cavalry, the objective to be sought, the localities to be searched, and the character of information to be obtained.

Thus the air craft facilitates the work of obtaining detailed information, which can be acquired only by close observation, by contact, and by development of the enemy's forces and positions, which remains the sole duty of the troops on the ground. Not only this, but it has especial value to a commander in finding his own troops, in keeping him informed when movements are taking place, and of the positions of his flanks and centre, his outposts, his cavalry, his artillery, of the positions attained by any detached body—in short, of keeping him constantly in touch with the locations and movements of all the units of his command under the changing conditions of battle.

It may then be said that air craft have extended the usefulness and power of all arms of the service, the infantry, the signal corps, and, more especially, the cavalry. For if the special field of reconnaissance be indicated, it is obvious that the cavalry or infantry can more quickly and accurately obtain the desired information regarding any particular point, than if obliged unseeingly to search the whole field of operations. A reconnaissance by troops may now move less in the dark, know better what to look for and search in detail, and lose less time and effort in accomplishing the object sought. No move of concentration from flank or centre, no development of a wing, nor reinforcement of a weak position, should remain unknown to the adversary who possesses a thoroughly efficient flying corps.

In addition to the influence exerted by air craft on grand operations, events now appear to show that their value in more detailed operations is great, and may increase in the future to enormous proportions. This is particularly true in artillery practice afloat and ashore. It may almost be said that guns are fought by means of the eyes of the aviator. Instead of the old-fashioned system of range finding by trial fire, or by observation from the battery or elevations near by, the exact range may often be found with the help of aeroplanes, which signal positions, and the location of bursts. Artillery fire direction has thus been enormously increased in accuracy, especially when the bursts cannot be seen from below. Infantry fire also has been largely improved in efficiency by the same means.

The aeroplane has further undoubted use in finding concealed positions, in locating hidden howitzers or mortars, and in pursuit and rear-guard actions. It will be useful in locating ships at sea, or at anchor within defenses; especially in the detection of submarines and submarine mines, and certainly in the enormously increased efficiency given to seacoast gun fire; also to the coast defense, the coast guard, and many other elements of observation.

But the useful, proven, and most important work of air craft is reconnaissance, and the collection and transmission of information in the theatre of military operations. For this reason aviation must be reckoned as a vastly important branch of the signal corps of the army.

The use of the aeroplane as a defense against aeroplane attack, and for the rapid transportation of commanding officers or important personages is, of course, obvious. Although still in its infancy, the air service has made definite strides in the present war, and with the perfection or improvement of each technical detail, it attains a position of greater importance. Neither electricity, nor steam, went forward at so rapid a rate. The future still hides, but undoubtedly holds, a very great development for this infant auxiliary.

Training.—The care of horses and wheeled vehicles, knowledge of the gas engine and electricity are the fundamentals for the training of signal troops. With all this, each man must be a soldier, for, after all, he is but a cog in the huge military machine, and this training is necessary in order that he may play his part smoothly. Without military training to accompany his technical knowledge, he is as a stranger entering the inner circles of a family. It should therefore be evident to all those in training camps, who may wish to prepare for service in an auxiliary arm or staff corps, that no time is lost in getting a soldier's training first.

Should this country be involved in war of any magnitude, there would be needed no less than a thousand signal officers, who must come from civil pursuits. Electrical engineers, telegraph, telephone, cable, and radio engineers, and allied professions such as the signal service of railroads, and many others, should furnish most excellent material for officers. In the aviation units many experts would be required besides the aviators to keep up the service of maintenance.

The enlisted personnel is made up of privates in two grades, of corporals, sergeants, 1st class sergeants, and master signal electricians. The private is the very beginner, and if he possesses knowledge or aptitude and willingness, is quickly advanced to the grade of first class private. In this grade, and that of corporal, are the majority of telegraphers. Above this grade, technical knowledge, and ability to handle men and sections of work, are necessary. In peace times the last two grades are reached only after examination tests in electricity, and allied subjects, including the use, repair, and construction of the many articles of signal corps equipment. In other words, practical electricians in the signal corps, who apply themselves to learn the work of the corps, find themselves advancing toward the top. As every organization is self-sustaining, cooks, mechanics, blacksmiths, clerks, saddlers, teamsters, and others make up a very necessary part of the personnel. These proportions assembled together make a company, over which a captain presides, assisted by lieutenants. This unit or family is now ready to go forth and through its captain becomes responsible for the results that superiors expect.

The Work of the Corps.—It is impracticable even to begin to describe this in detail. The best idea may be given by pictures of actual accomplishment.

First, an extract from the report of General Greely, the Chief Signal Officer of the Army, on recent American campaigns: "Their practical operation is the story of the field duties of the American Signal Corps, in Cuba, China, Porto Rico, and the Philippines. Its work in '98 placed the White House within five minutes of the coast of Cuba. It first located Cervera's fleet, and first announced its destruction. At Santiago it stretched telephone wires along Shafter's front from San Juan Hill to Aguadores. In Porto Rico it opened up cables; and with the telephones and sounders of its electric lines keeping pace with every division, was in the forefront under fire. In China it followed Chaffee's columns, and, entering Peking on the heels of his victorious troops, alone kept the world in touch with the imperial city for a week. It repaired Dewey's cable at Cavite, and directed the fire of the Monadnock at La Loma. In the Philippines its 10,000 miles of constructed and maintained telegraph lines and cables connected all tactical points throughout the Archipelago, whether in the field or camp, under fire or in quiet intervals; not only did its campaign work shorten the insurrection, but also its existence later rendered possible great reduction of forces without endangering peace, more than once saving a garrison."

Also this picture of present operations in Europe, showing how a cable detachment maintains communication with a division which has been ordered to move to some other position: "The cable detachment moves off at a trot, across country, along roads, through villages, and past columns of troops, the white and blue badge of the signal service clears the way. Behind the wagon, from which unreels the cable, rides a horseman, who with the aid of a hooked staff, deftly lays the cable in the ditches and hedges out of danger from heavy transport and the feet of trampling infantry. Other horsemen are in the rear tying back and making the line safe. On the box of the wagon sits a telegraphist, who is constantly in touch with headquarters as the cable runs swiftly out. An orderly dashes up with an important message; the wagon is stopped, the message dispatched, and on they go again."

And again at a German headquarters mess where, in reply to a question as to existing conditions on the firing line, some 40 forty miles away, the general commanding took up a telephone receiver, called one station, and there were distinctly heard the boom, boom of the artillery and the rat-a-tat of infantry fire; connecting with a second station farther along the lines of the western front, merely the infantry was heard; and still farther along the trenches, was silence. A complete and instantaneous report on fighting conditions as they existed.

Advantages of Peace Training.—To dispel the widespread conceptions of undesirable conditions in Army Service, and to show the advantages that really exist in the American service, the following is given: "The technical education of the signalman is very carefully considered. Schools of instructions are maintained at Fort Wood, New York harbor, and Fort Leavenworth, Kans., where courses are given in telegraphy, including radio, military signalling, electricity, photography, line construction; general instructions concerning the care and handling of government property and rendering the necessary reports, and handling moneys received at military telegraph offices, as well as practical military instruction covering the duties of a soldier; while the aviation school at San Diego, Cal., and the aviation centre at San Antonio, Tex., furnish instruction regarding the repair, maintenance, and flying, of aeroplanes. In addition to the schools named, each field and telegraph company has its school, in charge of capable officers, where classes are conducted for instruction in the duties performed by the signal corps. Separate laboratories are maintained in Washington, D. C., and at the United States bureau of standards in the same city. Detachments of the signal corps on duty at these stations are engaged in experimental work of a most interesting character. Associated with electrical and radio engineers of a high degree of training and ability, members of these detachments are furnished opportunities, in both theory and practice, to perfect themselves in technical and intricate branches of electrical engineering.

"Excellent opportunities are offered for making use of any special aptitude, as that of a blacksmith, carpenter, engineer, machinist, plumber, cable splicer, and many similar occupations, and men possessing a limited knowledge of any of these occupations on entering the corps have in many cases been able to gain valuable experience and practice, thus not only often leading to rapid promotion and agreeable service while members of the corps, but equipping them with a calling wherewith to earn a livelihood in civil life after their terms of enlistment have been completed.

"Among subjects taught by the signal corps, special mention is made of modern aeronautics and radio telegraphy. The development of aeronautics in the army, with which the signal corps is charged, offers a field that is new and full of promise. Modern aeronautics, likewise electrical power in the army, depend primarily on the gasoline engine—the machine that has been the magic force in modern progress—which in itself can be made the subject of a liberal education. The rapid rise of radio telegraphy and its general application have been phenomenal. The signal corps has applied this means of communication wherever its use is possible, and has developed and built high-power stations in Alaska, the Philippine Islands, and in the United States; has devised and constructed portable tractors of the automobile type for use at division, corps, and army headquarters, as well as skid and pack sets for use with small commands and under varying conditions. Radio operators are required for the operation of these stations, as well as expert gasoline-engine men for the high-power stations, and chauffeurs with the tractors. The signal corps has also installed radio stations on all army transports and supplies the operators needed at these stations.

"The course at the schools at Forts Wood and Leavenworth usually covers a period of about six months, at the end of which the men have ordinarily obtained the necessary foundation in theory and practice to enable them to be assigned to practical work, such as maintaining telephone systems at military posts; operators at telegraph offices and radio and cable stations; linemen; gasoline engineers, and photographers at detached stations or with field and telegraph companies. The men upon completing the course of instruction at the aviation school at San Diego are usually assigned to duty with aero squadrons at aviation centres. The exceptional feature about an education obtained in the signal corps is that it not only furnishes the necessary theoretical knowledge, but also supplies the practical experience without which theory is to a great extent worthless.

"And to show that while gaining this valuable experience, the government generously rewards the enlisted man, his rate of pay per month is given, and this is in addition to all expenses.

"The pay of enlisted men serving in Alaska, China, and the Philippine Islands is increased 20 per cent., and a further increase of 35 cents per day is allowed enlisted men employed in Alaska on the Alaska cable and telegraph system. All enlisted men, in addition to their regular pay, receive rations, quarters, clothing, fuel, bedding, medicine, and medical attendance when required.

"It must therefore be evident that service with the signal corps of the army not only offers an excellent career for young, energetic, and ambitious men, and affords training in the development of self-control and regularity of habits, as well as improvement in physical vigor, but extends excellent opportunities for advancement in many lines of mechanical endeavor, including some of the most useful and unlimited occupations falling to the lot of man, thus preparing them to enter successfully, upon terminating their army service, lucrative employment in civil life."

Signal Corps Pay Table

			If reenlisted within three months.				
	First enlistment	Second enlistment	Third enlistment	Fourth enlistment	Fifth enlistment	Sixth enlistment	Seventh and subsequent enlistments.
Master signal electrician.........	$75.00	$79.00	$83.00	$87.00	$91.00	$95.00	$99.00
First-cass sergeant	45 00	49.00	53 00	57.00	61.00	65.00	69.00
Sergeant..........	36.00	40.00	44.00	48.00	52.00	56.00	60.00
Corporal..........	24.00	27.00	30.00	33.00	36.00	39.00	42.00
Cook............	30.00	33.00	36.00	39.00	42.00	45.00	48.00
First-class private	18.00	21.00	24.00	27.00	30.00	33.00	36.00
Private...........	15.00	18.00	21.00	22.00	23.00	24.00	25.00

The above quotations are from "Circular No. 8, of 1915, Office of the Chief Signal Officer of the Army," Washington, D. C., to whom the reader, if his interest has happily been aroused, may apply for a copy of this tremendously interesting and instructive pamphlet, which has been in reality the basis of most of the above discussion.

CHAPTER XI

TACTICAL RULES

THERE are a few principles for handling men and situations in the presence of the enemy, so fundamental and yet simple, that I have thought they could be grouped here together, and so thoroughly learned that they might become to the military man what the multiplication table is to the mathematician. They may strike you as almost too simple to bother with; yet we have seen one or another violated again and again at maneuvers, while our history teems with instances where officers have met disaster through non-observance of some one of these simple rules.

On the march, distances in column must be kept closed up, to make quick, sure deployment possible, without long running up from the rear.

Covering detachments must always protect the main body from surprise attack. On the march and in camp, this is generally regarded. But at temporary halts, it is too often forgotten, and invites disaster.

Going into a fire fight, the men must not be winded, nor unduly excited, by being rushed pell mell into action.

Deploying from column for action, leading elements must hold back until all rear elements are properly on the line, as they would do at drill.

Never deploy, until by reconnaissance you are sure of the proper *direction,* and that you are as far advanced as practicable.

Deploy only the strength necessary for the immediate purpose. Always keep a reserve in hand, and use it only when the opportunity demands.

If suddenly confronted with an occasion for action, adopt a *simple, definite* plan; and then carry that plan out firmly.

Having undertaken any one engagement, concentrate *all* your resources on bringing it promptly to a successful issue. Forces detached for side issues are inexcusable, unless they keep larger forces out of the immediate opposition.

Small forces cannot safely undertake extended turning movements, etc. Concentration within supporting distance is necessary, unless each part is strong enough to win by itself, is too small to fight anyway, or is extremely mobile, as mounted cavalry.

Always avoid fighting on ground of the enemy's own choosing, especially if he has had time to prepare it for you. By maneuvering, shift the scene if possible to your own advantage.

On the march, the position of the commander is with the advance guard, where he can get timely information at first hand; in action, it is where he can best see and control his forces. In both cases, he must avoid becoming involved too closely with the actual fighting, which makes clear perception of the whole situation quite impossible.

Going into a fight, each organization always has its scouts well out in front, and combat patrols well out on exposed flanks, and so far advanced as to prevent our line coming unexpectedly under enfilading fire.

Communication must be maintained at all times between the elements of a command. Thus a company going into action signals from one element to another, and a man in each is detailed to be on the lookout for these signals.

A passive defense is deadly, and does not win battles. Aggressive action is safer, and more prolific of victory. Troops that have the initiative, hold the advantage. They force the others to play their game.

The position of your firing line should always be as nearly as possible perpendicular to the enemy's line of fire.

All the rules for fire discipline and control must be observed; but most disastrous of all is to open fire before it is ordered, or to allow excitement to start a fight with loss of fire control. It will hardly be regained again in that fight.

Never open fire on small forces of the enemy advancing upon you in position. They are trying to get you to do just that, so they may report back what your position is. Let them keep coming. They cannot hurt you, and will have to surrender, or be killed in trying to escape, if you let them get close enough.

It is impossible to shoot troops out of position; hence an attack involves a determination to assault.

Advancing under fire the greatest attention will have to be given by all the men to keeping a general alignment, and to avoiding the constant tendency to bunch into groups, which make such good targets for the enemy.

While actually under fire you can move only straight forward with any safety. To move toward a flank is very dangerous, to move toward the rear is deadly.

Even in small affairs, a few rifles delivering fire of position, will often be the most helpful thing for the attack.

In selecting defensive fire positions for delaying actions, a safe line of withdrawal, not exposed to the enemy's fire, is absolutely essential. Unless the situation demands the sacrifice of your men, this is the determining consideration in your selection of positions.

In withdrawing from these positions, keep a few rifles busy in the line, while the others get back to the next position, or otherwise make ready for a safe get away.

If ordered to any military undertaking, never start on your mission until you are absolutely sure you have a clear understanding of each of the points you should know for its proper performance.

And finally, the least appreciated and the most important! In handling your men in the presence of actual conditions, you absolutely must use the same commands and the same movements that they have been taught on the drill field. The men are going to be sensitive to disturbance, and to anything unusual. If they think that you cannot control them by the usual methods, that their training has failed, they are likely to believe that everything has gone to the bad, and their morale will go with it. To illustrate: A company was unexpectedly assembled to meet an emergency. The lieutenant in command told the men to "load their pieces." A wave of uncertainty swept down the rank, with here and there a man starting nervously to load. The old-soldier first sergeant, instinctively grasping the situation, jumped in front and commanded, "Steady." And then, "Company, Load!" And the rank stiffened into a confident machine.

CHAPTER XII

MILITARY COURTESY

1. **Your** observance of the forms of military courtesy is a measure of your discipline and soldierliness. All the armies of the civilized world from time immemorial have found it advantageous and fitting to observe strict military etiquette and ceremonial; and these forms are much the same in all services.

2. The military salute is universal. It is at foundation but a courteous recognition between two individuals of their common fellowship in the same honorable profession, the profession of arms. Regulations require that it be rendered by both the senior and the junior, as bare courtesy requires between gentlemen in civil life. It is in reality rather a privilege than an obligation, it betokens good standing, in a common cause; a prisoner, not being in good standing is forbidden by regulations to render the salute. This is the right conception of saluting; and in this light you will see that the question should be not "shall I salute," but rather "may I salute?" And if you are an individual out of ranks you can rarely go wrong by saluting. The salute is rendered to all officers, active or retired, of the Army, Navy, Marine Corps, and Organized Militia. Officers of foreign military and naval services should be saluted as those of our own.

3. Whenever the "Star Spangled Banner" is played at a military station, or at any place where persons belonging to the military service are present in their official capacity or present unofficially but in uniform, all officers and enlisted men present will stand at attention, facing toward the music, retaining that position until the last note of the air, and then salute. With no arms in hand the salute will be the hand salute. The same respect will be observed toward the national air of any other country, when it is played as a compliment to official representatives of such country.

4. Officers or enlisted men passing the uncased colors will render the prescribed salute; with no arms in hand, the salute will be the hand salute, using the right hand, the headdress not to be removed. By uncased colors is meant those that are not in their waterproof cases. By "colors" is meant the national and regimental flags that are carried by troops. In Army Regulations the word "colors" is used in referring to regiments of infantry, battalions of engineers, and coast artillery, while "standard" refers to cavalry and field artillery. By "flag" is meant the national emblem that waves from flag poles and other stationary poles. They are not saluted.

5. On all occasions, outdoors, and also in public places, such as stores, theatres, railway and steamboat stations, and the like, the salute to *any person* whatever by officers and enlisted men in uniform, with no arms in hand, whether on or off duty, shall be the hand salute, the right hand being used, the headdress not to be removed.

6. You will note that Army Regulations have now rendered obsolete the custom of removing the headdress on certain occasions. Hereafter this will never be done as a courtesy or salute. But one form of salute now obtains, the right hand raised to the headdress. No salute is rendered if uncovered.

7. Salutes are rendered within such distances as allow individuals and insignia of rank to be readily recognized, about thirty paces. You would salute an officer where you would exchange greetings with a casual acquaintance. The soldier is "at attention" when he salutes; either at a halt standing at attention, or if walking, marching at attention. This requires military bearing, clothing properly adjusted, and forbids smoking while saluting. If moving at a trot or double time, he must first come to the walk or quick time. An officer would continue at double time or the trot, but should be saluted just the same.

8. An enlisted man without arms mounted or dismounted salutes with the right hand. If officer and soldier are approaching each other, the salute is commenced

when six paces from the officer. If the approach does not continue to within six paces the salute is rendered at the nearest point. If passing each other in the same direction, the salute is rendered just as they pass. It is a common fault to begin the salute six feet rather than six paces away. Count your steps sometime and see that you are prompt enough.

9. In saluting look at the person saluted and maintain the salute until it has been acknowledged or the officer has passed. The precision and snap with which you salute marks the type of soldier you are and the pride you take in your profession. It is a pleasure to return a snappy salute, and a strange officer is apt to inquire to what organization you belong. There are so-called salutes so indifferently made that an officer would be ashamed to acknowledge them. He could feel no brotherhood with such a soldier.

10. Where an officer is recognized, he is saluted the same whether in civilian clothes or uniform. The enlisted man may be in uniform or in civilian clothes. The presence of ladies with either party makes no difference.

11. An enlisted man out of ranks armed with a sabre, salutes with the sabre if drawn, otherwise with the hand; armed with the rifle, he makes the prescribed rifle salute, the rifle on either shoulder. If indoors, he salutes at the "order," or if moving, at the "trail." The same regulations obtain as to distances, and looking at the person to be saluted.

12. The soldier salutes with the "present arms" only when posted as a sentinel. When a mounted man, officer or soldier, wishes to address or is addressed by his military superior, he first dismounts.

13. An enlisted man accompanying an officer, should walk about two paces to the officer's left and rear; if riding, this distance is doubled.

14. A noncommissioned officer in command of a detachment should call them to *attention* and himself render the salute to an officer as above explained for a single indi-

vidual. If the officer passed in rear, the detachment would be brought to attention and so held until he had passed, but no salute would be rendered.

15. When an officer approaches a group of enlisted men not in ranks, the first one to perceive him should call "attention" so that all will hear, when all stand at attention, and at the proper point, all salute. If walking together the same rules obtain, except that the salutes would be rendered without halting. If indoors the same rules obtain except that if unarmed they uncover and that no one salutes unless spoken to; if armed all would salute. One exception to this rule—if seated at meals the soldiers do not rise at the call "attention," but cease eating and remain sitting at attention. Of course, any individual addressed by the officer would rise. By "indoors" is meant military offices, barracks, quarters, and similar places—it does not refer to store houses, riding halls, stables, post exchange buildings, hotels, etc.

16. Upon the approach of an officer indoors, the enlisted man, if unarmed, uncovers and stands at attention, and does not salute. If armed with a rifle, he salutes from the position of the order or the trail; if armed and uncovered, he should cover before saluting if practicable. A soldier with belt, side arms, pistol, sabre, or bayonet, is considered armed.

17. Whenever holding conversation with a superior, a soldier should stand strictly at *attention*, the conversation being preceded by the military salute; and it is only by strictly observing the position of attention that you may be really at ease, any half-way measures will tend to make you self-conscious and ill at ease. And do not keep assuming that the officer has finished his remarks and thus have to repeat your salute at leaving. It is much more military to stand pat until he has dismissed you with such words as "that will do," then you may make a dignified salute on departure.

18. The soldier actually at work does not stop his work to render a salute, unless addressed by the officer. Driv-

ing or riding in a carriage or other vehicle, the soldier would salute as though walking, but without rising.

19. In camp a mounted man should not take his horse up in front of an officer's tent where he may soil the ground. Leave him tied or held at a little distance. Even when he brings up the officer's horse, he may hold him a little way off, until the officer directs him to come closer.

20. In holding the horse for an officer to mount, the orderly should invariably stand on the off side facing the horse's shoulder, both reins held firmly in the right hand just behind the bit, the left hand holding the right stirrup and adjusting it neatly to the officer's foot as his leg comes down in the mount. If the orderly has his own horse with him, he must hold that horse out of the way on the off side of the officer's horse.

21. An enlisted man in conversation with a military superior will properly use the third person, *i. e.*, he will ask, does the sergeant intend so and so? Not do *you* intend so and so? Or, does the lieutenant want his horse? etc.

22. Where a verbal message is carried between officers the messenger prefaces the message with "The Adjutant presents his compliments"—The commanding officer, Captain so and so, whoever sends it—"and directs, asks, says, requests, etc.," followed by the message.

23. To report for duty as orderly, the man proceeds to the officer to whom detailed, stands at attention before him and when the officer gives him opportunity salutes and reports in these words, "Sir, Private ——, Company I, 10th Infantry, reports as orderly."

24. At all times and places outside his quarters an enlisted man should be neat and orderly in his appearance. His hat and clothing should be properly adjusted, and buttoned up. Even fatigue uniform should be properly worn. In the field in hot weather, it is allowable in ordinary circumstances to have the top button of the shirt unbuttoned —but never the shirt sleeves rolled up. At formations, such as retreat, everything should be the neatest possible. There is something wrong with the organization whose members are habitually indifferent to their soldierly appearance.

25. Every one should know the various insignia worn by officers to indicate their grade.

They are found on the collar of the O. D. shirt, on the shoulder straps and loops of coats, and on sleeves of overcoat, and are as follows on the collars and shoulders:

Major General—two stars.
Brigadier General—one star.
Colonel—eagle.
Lieutenant Colonel—oak leaf, silver.
Major—oak leaf, gold.
Captain—two silver bars.
First Lieutenant—one silver bar.

On overcoat and full dress coat sleeves a knot of three loops of braid for officers below the grade of general.

Colonel—the knot contains five rows of braid.
Lieutenant Colonel—four rows.
Major—three rows.
Captain—two rows.
First Lieutenant—one row.

26. No honors are paid by troops when on the march, in trenches or on outpost, except that they may be called to attention.

No salute is rendered when marching in double time.

Arms are not presented by troops except in the ceremonies.

The commander of a body of troops salutes all general officers and the commander of his post, regiment, squadron, or immediate organization, by bringing his command to attention and saluting in person. He salutes all others without bringing it to attention.

When two officers exchange salutes, each commanding a body of troops, the troops are brought to attention during the exchange.

An officer in command of troops is saluted by all junior officers and by men out of ranks. He does not return these salutes.

CHAPTER XIII

GUARD DUTY

1. GUARDS are for the purpose of ensuring security: to secure government property from molestation; to secure the observance of military regulations, police and sanitary; to secure military prisoners; and to secure undisturbed rest and the impossibility of surprise for troops in service. The first three duties are performed by interior guards and the regulations governing this class of guard duty are set forth in detail in the volume called "Manual of Interior Guard Duty."

2. Not so many years ago the efficiency of a command was measured by the excellence of its performance of interior guard. These were the days when close order drill and ceremonies were practically the only interest in the garrison, as the English put it "the days of spit and polish." To-day the one object of all our training is field efficiency, and commanding officers rather deplore the amount of time their men must sacrifice to the performance of necessary guard duties, which give scant return in training for efficiency compared with the time they consume.

3. Duty as a sentinel is the most responsible, dignified, and serious individual duty that a soldier may be called upon to perform. He must be taught to look upon this duty in that light. Delinquencies, such as temporary absence, drinking intoxicating liquors, or neglect, which might not be serious in ordinary circumstances, become grave offenses when committed by a soldier who is on the guard detail.

4. While the regular service must keep up a rigid observance of all the regulations of the Guard Manual, nonprofessional soldiers will have so few opportunities to employ interior guards that it appears impracticable for them to attempt to learn and keep in mind all these

detailed regulations and observances. They have so much to learn that is absolutely necessary for field efficiency that they will do better to substitute for study of the Manual of Interior Guard Duty, a thorough appreciation of the fundamental principles of guard, and then to take up the detailed study of the Manual if some unforeseen occasion makes its practice necessary. Even the regular officers and soldiers must continually refer to the Manual to be exactly sure of each and all its niceties. This duty is very much in the same category with ceremonies.

5. The following are the General Orders applying to all sentinels, who are required to memorize them. Where the regular service offers opportunity for frequent use of these orders, it is practicable for soldiers to remember them verbatim. For others, who have not this opportunity, it would appear more reasonable to digest thoroughly their meaning, so that unexpected guard duty might be performed intelligently, and the polish be put on as time warranted.

"To take charge of this post and all Government property in view.

"To walk my post in a military manner, keeping always on the alert and observing everything that takes place within sight or hearing.

"To report all violations of orders I am instructed to enforce.

"To repeat all calls from posts more distant from the guardhouse than my own.

"To quit my post only when properly relieved.

"To receive, obey, and pass on to the sentinel who relieves me all orders from the commanding officer, officer of the day, and officers and noncommissioned officers of the guard only.

"To talk to no one except in line of duty.

"In case of fire or disorder to give the alarm.

"To allow no one to commit a nuisance on or near my post.

"In any case not covered by instructions to call the corporal of the guard.

"To salute all officers, and all colors and standards not cased.

"To be especially watchful at night, and, during the time for challenging, to challenge all persons on or near my post, and to allow no one to pass without proper authority."

In addition to the foregoing, sentinels posted at the guard house or guard tent will be required to memorize the following:

"Between reveille and retreat, to turn out the guard for all persons designated by the commanding officer, for all colors or standards not cased, and in time of war for all armed parties approaching my post, except troops at drill and reliefs and detachments of the guard.

"At night, after challenging any person or party, to advance no one but call the corporal of the guard, repeating the answer to the challenge."

6. These orders contain one provision, "To walk my post in a military manner," that in many circumstances will not result in efficiency. As the sentinel at an outguard remains immovable and alertly watching, so often in interior guards, a sentinel can much better observe what he is stationed to guard, at a fixed point somewhat removed from it. Where the sentinel walks a beat he is too prone to move in some regular manner that makes it easy for an observant person to take advantage of his back being turned; and not infrequently commanding officers have eliminated this clause of orders and stationed sentinels on stationary posts with orders to keep certain ground under constant observation. This idea is particularly applicable to the sentinel on the picket line in the form of a hollow square, where he is posted in the centre; and it should always be considered in selecting a sentinel's post.

7. A fundamental principle of guard duty is that the sentinel shall observe everything that takes place within sight and hearing of his post. Even if something appear at the time so trifling that the sentinel does not consider it

of sufficient importance to report to his corporal, nevertheless a later investigation would expect to find him able to give a clear statement of the facts, including a fairly accurate idea of the time of the occurrence. Sentinels are the eyes and ears of the commanding officer, to see, hear, and mentally record everything. Through them post and camp regulations are enforced while the garrison sleeps.

8. It is also fundamental that sentinels are given dignity and authority fully commensurate with their great responsibilities. Officers of all grades as well as enlisted men are required to respect their authority. They take orders from no one except those officers directly connected with the guard. Such dignity must lend grave seriousness to the performance of their duties.

9. In addition to the above general orders which apply to all sentinels, each sentinel is invariably given certain *special orders.* These special orders always define the sentinel's post and then tell him what he is there for, what his special duties are as sentinel on this particular post. These should be explicit, simple, common sense, and clearly understood by all. In inspecting your guard it is of first importance to see that your sentinels have a clear working knowledge of their special orders.

10. Responsibility for the proper instruction of the members of the guard, and for the proper performance by them of all their duties, rests first on the officer of the day and then down through each of the subordinate commanders to the corporal of the relief, who must make it his personal business to see that the members of his relief are properly instructed.

11. In the field your interior guards will generally be stable guards only. In riot duty the question of guards assumes grave importance. Even here, however, it will be the faithfulness and efficiency with which the sentinel carries out his special orders that will count, rather than his observance of prescribed formalities. Do not misunderstand that it is intended to make too light of formali-

ties; understand rather that where time necessitates selection, you should choose first efficiency, and then if time permits, take up a study of the formalities. But do not feel that it is impossible for you to perform efficient guard duty in case emergency arises because you have not had time to learn the formalities. Earnestness and faithfulness on the part of the sentinel in carrying out intelligent special orders covering the duties that he has been posted there to perform, will result in the necessary efficiency in actual service. Earnestness and faithfulness you must have, but with your personnel, it is believed you can get them as surely by an appeal to an intelligent understanding of their necessity, as by the slower regular service process of great attention to detail, formality, and all the dignity of ceremony and occasion.

12. While you may dispense with the ceremony of Guard Mount, you may not dispense with the formality of inspection of the guard detail before it enters upon its tour. The guard detail should be formed and you should inspect its members thoroughly to see that they are properly clothed and equipped, their arms in good condition, and that all are in physical condition for the work, observing particularly any signs of their having been drinking; and then formally assign the officers and the noncommissioned officers to their respective offices of command in the guard.

13. While it is not necessary that the sentinel be posted with the formalities prescribed, you must, nevertheless, see that he is posted with such formality as will impress him with the seriousness of his duties, a knowledge of the limits of his post, and an appreciation of what he is put there to do.

14. The dignity of the sentinel on post should be reflected in the highest degree by smartness in dress, equipment and military conduct on the part of the sentinel. He stands alone, under the eyes of all who pass. He should be an example in soldierliness. He represents your

organization, whose efficiency is likely to be judged by his conduct and appearance.

15. The sentinel salutes at a halt, faced toward the person he is saluting, and with the present arms. He is always at the port arms when in communication with anyone.

16. Except in "running guards" it is the custom for guards to be mounted for a twenty-four hours' tour, and for the individual sentinel to be on post for two consecutive hours, alternating with four hours off, during which he remains at the guard house as a member of the guard under certain regulations.

17. In case you are called into actual service in time of war you will have to study the Guard Manual to learn the many rules governing the conduct of interior guards, learn all the ceremony attending the posting of reliefs, etc., and particularly those rules governing the conduct of prisoners and of sentinels over them.

18. Orders for sentinels on outpost are discussed in the chapter on outposts. Running guards are used in field service, where the whole night is so divided that each man walks but once and sleeps the rest of the night.

CHAPTER XIV

RIOT DUTY

1. OBEDIENCE to law is normally the result of public opinion. When this fails in individual cases, the police power is employed. Where many men join together in open violation of law, in defiance of public opinion, they are no longer quite reasonable, and their misconduct may soon pass the power of the civil authorities to control. To meet this contingency every government maintains a military force. The Organized Militia is the military force thus maintained by each state; our army is that of the Nation, and is not infrequently called to this duty.

2. While you are training for duty in the first line of defense of the nation, it is still possible that you may be called to duty in preserving domestic law and order. And while the following applies to state troops more particularly, it is greatly in the public interest that all citizens have an understanding of these underlying principles, and of what is to be expected of troops in the performance of this duty. The National Guard will in fact be more often called into service for this duty, than for that of the federal government. They therefore particularly must be fully prepared to meet a call from their state, and to meet it promptly, and to carry it out wisely and efficiently.

3. Most officers dread this duty on account of its uncertainties, and on every hand there are requests for definite instructions as to its conduct. This is natural, for it is realized that in dealing with the mob we are dealing with unreason.

The nation and the states both recognize how uncertainty will assail you as you contemplate the performance of this duty, and recognize also the impracticability of laying down definite rules of conduct to govern you in each particular case. Both have therefore enacted generous laws to protect you in the conscientious performance of this necessary duty. For state service, you should look up your own state law, and see what authority and protection it gives you; and similarly for federal service.

4. Your uncertainties will largely cease if you will stop to think about it in this light, realize how the law reposes confidence in your judgment, intelligence, and faithfulness, and backs you up absolutely so long as you conscientiously use them. If an officer have sufficient knowledge and judgment to justify his appointment to leadership, and has learned the fundamental principles that govern in riot duty, he should be confident of his ability to meet wisely whatever situation may arise.

5. State troops may be called to this duty by any one of the following civil officers: A Justice of the Supreme Court, a county judge or recorder, or city judge of a city, or sheriff of a county, or mayor of a city.

6. The call should be put in writing and must state the object for which the troops are called into service. How that object shall be accomplished by the troops is to be determined solely by the commanding officer of the troops. Let this be clear in your mind: the civil authorities state what object the troops are called to accomplish, the method by which it is accomplished rests solely in the hands of the military authorities. If the civil officer calling for aid is not any one of those named above he must produce the statute on which he bases his authority for calling upon the military. In any case *insist* that the *call,* and the object for which called, be put in writing.

7. Having been lawfully called upon, the military officer will respond promptly by ordering out the military force under his command, or such part of it as his judgment deems necessary; and shall immediately report what he has done and all the circumstances of the case to the Governor.

8. In case of unsatisfied question as to the general or specific object of the call, or of contradiction between the civil officers making the call or their directions, report to your Commander in Chief by the most direct method

possible, preferably the telephone; and in the meantime use your forces so as to secure the public peace and due observance of the law agreeably to the call made upon you by the civil authorities.

9. You will now exercise your own judgment in using your military forces to carry out this object. In the presence of riot the law requires you to use, and protects you in using, such force as in your honest judgment is necessary; and to cease using this force as soon as the object is accomplished. It is not your function to inflict punishment, so guard against allowing this natural impulse to carry you one step beyond the actual accomplishment of the object of your call.

10. The psychology of crowds,* or of mobs, would be most profitable reading for all of you, equally interesting and helpful to you as civilians and as officers. Enough here, however, that you accept the following fundamental truths and apply them in regulating your conduct in any given situation: (a) A crowd which is to become a mob is in its beginnings cowardly. Its individuals hesitate at open violation of law and are fearful of its consequences. (b) These individual wills are going to merge into the "crowd will," unreasoning, impulsive, led this way or that by forces that might have no power to control its members as individuals. (c) The longer the crowd is together, the greater its numbers, the more it is harangued or otherwise dealt with as a unit, more completely does this "crowd will" take shape and gain in strength and daring. (d) By temporizing with a crowd you merely allay the individual's fear of consequences and aid in building up a unit of action which will become the unreasoning mob. (e) In its earliest stages the mob itself is cowardly, of necessity undisciplined and with no certain leader or tactics. Brought face to face with the perfectly ordered and quiet discipline and force of the military it recognizes its own inferiority and is apprehensive of consequences. (f) If the military shows uncertainty or vacillation, attempts to temporize or treat with it as equals, it immediately gains assurance and courage. (g) If now the commanding officer of the troops makes the egregious blunder of bluffing in any way, for example, by firing blank cartridges or firing over the head of the mob, the spirit of daring and recklessness will spring to the fore, and lead to God knows what of bloodshed and destruction. The moral weakness or the falsely conceived gentleness and mercy of the commanding officer will result in ten-fold suffering. (To forestall the possibility of some commanding officer thus weakening, N. Y. Regulations positively forbid issuing blank ammunition to troops going on this duty.) (h) A crowd split into sections will rarely unite again. (i) A mob is especially subject to the disorganization attendant upon losing its leader or leaders.

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* "Psychology of War and Causes of War," Eltinge.

11. The fact that troops have been called out establishes the fact that the time has come for the use of *force*. The military must represent this force, dignified, absolute, and without thought of arguing. They must impress themselves upon the crowd as representing the immutable power of the law, solemn, dignified and unswerving. The directions of their commanding officer must be carried out promptly and without argument. If a commanding officer of troops ordered a mob to disperse, he fails utterly in his conception of the dignity of his office, and the dignity of his troops, and of the part they are playing in the government of his State, if he does not employ such force as to result in prompt and complete compliance with his orders. A few deliberate, conscientious shots fired at the very first time the mob fails to obey your orders, will not only save lives in handling that particular mob, but will have established in the minds of all the dignity and power which the military represents, and thereby will have saved bloodshed and destruction at other points of contact between the troops and the rioters. It is the true humanitarian who shows relentless severity at the very outset. This is the fundamental principle of dealing with mobs.

12. Policemen may push and jostle, club and be club-bed, step on toes and threaten to shoot without doing so; but the military descends absolutely from their true position of dignity and their true function in the law when they resort to such practices in dealing with a mob. They have been called as a last resort to defend the majesty of the law, in mercy let them do it with dignity, severity and without compromise. Done in this way their tour will be shortened, lives and property will be saved, they will be called less often to this duty, and the general welfare of the community and the State will be enhanced.

13. The National Guard must be prepared to meet this call promptly. It may come at any time. You should have not only complete equipment, arms, ammunition, suitable clothing, and provision already perfected for commissary supplies, but above all you must have a sure working system of notification to all the members of the command. One of the best means for this is employing the squad system, the organization commander having the names and addresses of his squad leaders always with him day and night; the squad leaders having similar lists of their own men. Each organization should take occasion to test the efficacy of its system of notification by unexpectedly calling its members at different times.

14. Note that even the "issuing" of blank ammunition to troops called to this duty is forbidden. In the absence of suitable "guard ammunition" it will be necessary to use service ammunition.

15. It is impracticable to give detailed instructions for the conduct of troops on this duty. Observance of the following principles, and application of your tactical training, should enable you to handle any situation:

(a) Do not dissipate your strength by making small detachments for various purposes, but always have enough men together at any point of contact to prevent the possibility of the mob getting the better of the situation, and if practicable have sufficient force so to overawe the mob that it will recognize your power to enforce your orders, and disperse without necessity for aggressive measures.

(b) In the execution of any movement *always hold out a reserve for emergency.*

(c) Acquire and maintain the moral effect on the undisciplined mob, of the quiet, positive, solid and precise execution of movements by your own forces.

(d) Enforce rigid discipline, the strictest observance of military forms and particularly rigid fire discipline. Men should fire only at the command of their immediate commanding officer, excepting an individual firing in self-defense, and sharpshooters who have been instructed to kill any parties firing or throwing missiles at the troops.

(e) If the men have been so trained that they may be controlled accurately by visual signals, their use on this duty will add greatly to the moral effect on the mob.

(f) You will be as particular about *security* in this duty, as in the field against the enemy, guarding particularly your flanks and rear from the possibility of surprise.

(g) The commanding officer should immediately establish a system for gaining information as to the intentions and movements of the rioters. He will use for this purpose whatever opportunities local conditions may offer.

(h) Troops will arrest all individuals found in open resistance to the civil authorities, and are required to overcome such resistance, and to secure and keep the peace by the use of whatever force their immediate commander deems necessary. Parties arrested are immediately turned over to the civil authorities. If this arrest is not made in connection with the open violation or resistance, but at a later time, for example, the next day, it would then be made by due process of law, the law officer being backed up if necessary by the military power.

(i) In the case of unlawful assemblies to be dispersed, warning must first be given by a civil officer if one be available, otherwise by the commanding officer of the troops. This warning cautions so-called innocent bystanders, and curiosity mongers, that their presence makes them equally guilty with the rest. They must be given a reasonable opportunity to get away.

(j) Where the riots are the result of conflicts between two parties in the community, as in the case of labor disputes, observe the strictest impartiality. Avoid even the appearance of taking sides. Do not accept from either party such assistance as means of transportation, subsistence or quarters. The supreme commander should consult with both, making his position as an impartial instrument of law for the preservation of peace and protection of life and property clear to both parties, and enlisting the intelligent co-operation of the leaders of both sides in the proper observance of the laws.

(k) The above function is for the supreme commander alone. His subordinates, officers and men, must avoid any discussions whatever, appearing only to be what they are in reality, a silent, irresistible force, for the execution of orders in sustaining the law.

(l) The supreme commander should take such steps, using the press and pulpit if practicable, as to inform all the public of the existing conditions; what the presence of the troops really means for the impartial but relentless observance of law; that all present at unlawful assemblies even though there through motives of curiosity only, are equally liable; attempting to enlist the sympathy and co-operation of all good citizens with the work of the troops.

(m) The men must be made to understand that they are "in service" in its most serious sense; that the most rigid discipline must be observed; that in dealing with citizens they must be most courteous, yet firm in carrying out their instructions; that they pay no attention whatever, nor appear to hear, insults or epithets from the crowd; that their immediate officers are fully responsible for their conduct, and that the law protects them absolutely in their execution of all legal orders from their officers.

(n) Distinguish the difference between a crowd and its later development, an ugly mob. A crowd may be dispersed by a mere show of force and firm plain spoken directions. The best way to disperse an ugly mob is to *prevent its having* formed and reached that stage. Early information and smart patrolling will often accomplish this.

(o) Let it be generally known that any person displaying or attempting to use a firearm or dangerous weapon or a stone, brick or other missile, will be fired upon by a sharpshooter without warning. At such time as this such a person is a public enemy, to be dealt with relentlessly.

(p) Let it be understood by all, your own troops as well as the public, that the force which you will use in enforcing law will be military force, and military force only, bullets, bayonets, sabres, used as they would be used in war. That sharpshooters will always be detailed to shoot down parties firing or throwing missiles at the troops. This should have a most salutary effect.

(q) Be sure that every man to the lowest private has a clear understanding of the mission of the troops. Then caution them to avoid any talking about it whatever. Do not tell how strong you are, how you are going to do this or that, get the full advantage of keeping the rioters ignorant of your strength and plans. This has its moral effect as well as physical.

(r) Avoid doing police duty unless ordered by competent authority. It is not your proper function.

(s) The horse is a cavalryman's best weapon for persuading crowds before they have reached too ugly a stage. Anticipating this, the horses must be so accustomed to the unusual sights and noises as to be indifferent to them, otherwise a single rioter might disperse a patrol, and send it flying down the street by simply kicking over an ash can at an opportune moment. Training for this may be had at the armory stables by giving the horses experience in all kinds of pandemonium under the direction of an officer. It is important, too, that horses be sure-footed, and some appliance which can be quickly adjusted, such as chain-calks, should always be kept at the armory ready for use when weather conditions require. The horses' haunches make the more efficient end for moving a crowd, and the more nervous the haunches appear (stimulated by a proper use of the spur) the more efficient they are. Remember that such methods are for use only with small crowds that have not yet reached the ugly stage.

(t) In dealing with an ugly mob only stern, inflexible, military means may be used; and remember that the sterner and more inflexible they are the more efficient and humanitarian they will prove. In this case you will never allow your troops to come into personal contact with a mob, if it can be avoided. If a charge is necessary it should be a military charge, driven home so relentlessly as to accomplish its purpose promptly and surely, and to inspire a wholesome awe of your troops in the future.

We are now contemplating a situation that requires actual fighting, and all the tactical principles for fighting an enemy in war time are equally applicable here. Their weak points and yours are the flanks and rear. Surprise and unexpected contact are as valuable here as in the field; to be caught changing formations, or unable to maneuver and get into position, is equally dangerous. Streets and buildings to be entered or left, become defiles with all their advantages to the enemy. Entraining and detraining are particularly dangerous in the immediate vicinity of the enemy, and arrangements must always be made to avoid it. Reconnaissance and guard duty must be performed with the utmost faithfulness. Whether entraining, on the streets, or in camp or quarters, it will be a negligent leader who allows himself or his men to run blindly into difficult situations. The unexpected and persistent appearance of active patrols in affected districts will be as disconcerting to rioters as to the commander of an enemy's army. In marching through a street, your flanking patrols for protection from rifle fire of the enemy, are dismounted sharpshooters marching on either sidewalk, watching the roofs and windows on the opposite side, with orders to shoot any person starting to fire or throw missiles at the troops. In the case of large mobs, your turning columns are troops moving in parallel streets, who attack the mob in the flank and rear while you hold them in front (these flank and rear attacks must always be made so as to leave corresponding streets open for the mob's retreat). The object for which you were called out is your military mission. The information you immediately proceed to gather of the strength, resources, intentions and movements of the rioters, is your military information as to the enemy. Maps of the community with all necessary data as to location of public buildings and their facilities, lines of communication, water supply, etc., are your military information of the terrain. And you should go about gathering this information as assiduously as you would in actual war.

(u) In the matter of controlling the situation you should endeavor to have the civil authorities close all saloons and similar places that will be natural meeting places for the unruly elements. You may also find it best that they forbid assemblies at such times. You are authorized in some states to close all drinking places within a mile of your camp. A judicious selection of camp sites should enable you to keep most drinking places closed.

(v) Be particular that you yourself do not indulge in drinking at this time. Conditions may require you to take grave responsibilities, even to taking life, and you must not be in a position where it may be said your judgment was even in the slightest degree influenced by drink.

16. This duty will furnish unusual opportunity for military training of the highest order, and all leaders should have this in mind and make the best use of it possible.

CHAPTER XV

SMALL ARMS FIRING

1. THE day of the American soldier being a natural rifle shot has passed. He must learn the art, as well as any other. But our government is very generous in its allowance of ammunition for this purpose, and we actually expect our men to acquire a degree of precision that will justify them in the expectation of being able to hit *individuals* of the enemy, rather than to be satisfied with firing in that general direction, which is about all that can be expected in most foreign services. Those who have had experience in big game hunting, will bring to the firing line an advantage which can hardly be estimated.

2. For the infantryman the rifle is everything, and his discipline includes the cold nerve to lie in the firing line, and deliberately make hits on the individuals of the enemy.

Omitting here any discussion as to the merits of dismounted fire action by cavalry, we will accept the fact that this is one of its important functions. Therefore, the rifle should be as intimate a friend of the cavalryman as of the infantryman. He should know it and care for it as conscientiously as he does for his horse; they are his dependence in battle the one or the other as occasion demands.

3. As in learning the Manual of Arms, so here the soldier himself is his own best instructor. First he should have his own rifle, assigned to him by number, with whose mechanism and peculiarities he may become thoroughly familiar. He must first be taught the necessity for proper care of it in order that it may be really serviceable; then he must learn how to care for it and then, knowing that his shooting success is to be determined by the results he gets with this particular rifle, he will take a personal interest in it, in learning it, and in properly caring for it.

4. He should know the nomenclature of its important parts, how these parts are assembled, and their peculiar functions. This information he may obtain from the Ordnance pamphlet, "Description and rules for the management of the U. S. Rifle calibre .30," which the first sergeant should lend him; or it may be taught him as part of the "practical instructions" in the squad. The rifle parts of particular importance are the bolt and magazine mechanisms, which he will learn to dismount, and then to assemble. He will learn that the accuracy of his rifle is soon ruined if the bore is not kept absolutely free from rust; and unless the effects of the powder gases and metallic fouling are thoroughly removed directly after the rifle has been fired.

5. To keep the rifle free from rust requires only faithfulness and an oiled rag, wiping all the metal parts whenever exposed to dampness, and as often as necessary. Quantities of free oil on the parts are not only unnecessary, but disadvantageous in accumulating dirt.

6. To clean the rifle after firing, first use a powder solvent on your cloth patches until the barrel is perfectly clean; then polish dry. If it still contains metal fouling, this must be taken out, which requires the use of a special solvent, see Chapter XVII. As this solution will rust the metal very quickly where exposed to the air, great care should be taken immediately to remove it thoroughly from the rifle bore by the use of dry patches. When thoroughly dry use oiled patches before putting the gun away. The rifle will probably "sweat" and should be cleaned with powder solvent again after twenty-four hours. Then dry and follow with an oiled patch.

7. Whenever the rod is used in cleaning the bore, the bolt should be removed first, and the rod inserted *from the breech,* the muzzle of the rifle *resting against a block of wood.* This is important as the passage of a metal rod through the muzzle results in wearing off the sharp edges of the rifling at the most important point for controlling the direction of the bullet.

8. Learning to Shoot.—Shooting is a gentleman's sport, much enjoyed and only at considerable expense. The Government is very generous in furnishing you free opportunity to indulge in this sport, and assists you in every way to become proficient in it. Even so, many soldiers miss this point, and get but little out of target practice. Looked at either as a sport or as a serious matter of individual training for proficiency in time of war, it really is up to every man to take a personal interest and pride in being a good shot, and each leader should take especial interest in having his group excel in this. Both the Federal and State Governments recognize the element of sport in shooting, provide for several competitions, and offer both individual and team prizes in profusion. It should be the company commander's object, however, so to control competitions as to make it a matter of participation and interest for *every individual,* not for a few specialists, who, becoming excellent shots, do all the competitive shooting for the company. These few men, be they ever so expert, will hardly be able to deliver the volume of fire moderately well directed that will be so essential to the success of the company on the battlefield. The ambition of the company commander should be a high average throughout the whole organization with the smallest number of really poor shots.

9. The Small Arms Firing Manual is one of the "service manuals" that are furnished each organization for the use of its officers and noncommissioned officers. For teaching the men to shoot, you should study the first forty-six pages, until you really know their contents, and are able to impart them in practical exercises to the men. Any able bodied man can learn to be an excellent shot, an expert if he will, practically by himself. If you will take the rifle that you are going to shoot with, and put in your leisure time working on the four preparatory exercises, you can have so trained your eye and hand, your breathing and muscles, that a little experience on the range will very soon perfect you. More than one expert

has acquired all his finesse both with the rifle and the pistol in his own room or dooryard, without actually firing a shot for weeks at a time.

10. It is essential for you to practice the preliminary exercises before going on the range, until you have acquired perfection in these first principles. Time is too precious on the target range for giving this instruction there. It is absurd to see a soldier experimenting with different positions and attitudes at the firing point, trying to find the one best suited to his own peculiarities. He should not be allowed to waste valuable time and ammunition in shooting, but be sent back for preliminary instruction.

11. At the very least each man should have absolutely determined for himself every detail of each of the firing positions, so that he will drop naturally into the particular position that gives him the best control over his rifle and his muscles in each of the prescribed positions. You cannot fire a consistent score if your position is unnatural and strained. And you will certainly upset your score if you change your position and hold while delivering the fire. With exactly the same aim, you will change the position of the hit by changing in any way the position of your hands that are supporting the rifle, or the amount of pressure you are putting on the gun sling, or the degree of pressure with which you are holding it against your shoulder, or the position of the butt in contact with your shoulder. While the prescribed positions must be executed uniformly as described when at drill, on the target range each individual is expected to adapt them to his own peculiarities in accordance with what he has found by experimenting to be most advantageous.

12. In practicing *aiming* observe the following: (a) Always have a small clearly defined point of aim. (b) It is important to learn to bring the line of sights up toward the right eye by raising the right shoulder and carrying it forward rather than to bring the eye all the way *down to the line* of sights by inclining the head. (c) It

is particularly important that you acquire the fixed habit of keeping your eye *focused on the target* throughout the time that you are aiming, and never allow yourself actually to look at the front sight, which causes blurring. You will see the front sight clearly enough when you bring it up close to the point of aim. (d) A great fault with inexperienced shots is their failure to lower the rifle for another trial the instant they feel the strain of holding their breath longer. Instead of quitting, they set their teeth, hang on to the aim, trembling more and more, and finally fire with the sort of feeling that that's the best they can do anyhow. A good shot will lower his rifle and take a few natural breaths and then try again, repeating this until he can fire with the rifle held comfortably and steadily.

13. The first consideration in *trigger squeeze* is the position of right hand and forefinger. The hand must take hold of the small of the stock with all of the gripping surface of the hand so thoroughly in contact with the stock that the act of squeezing your whole hand hard as in making a fist cannot cause any movement to the gun. Equally important is the position of the forefinger. The trigger must be pressed by the second joint, which is steady, strong, and exactly in the direction of the pull, and never by the first joint which is weaker, unsteady and oblique to the direction of the pull. Each man must be so familiar with his own rifle that he can not only take up the drag fearlessly before he holds his breath and settles into the last position of aim, but so that he can take up much of the creep as he brings the line of sight accurately to the bull's-eye. With an ability to do this he first perfects his position with an approximate aim; then he takes up the drag, takes his breath, fixes his eye on the target, and as he takes up the creep and makes an effort to bring the line of sight into exact position he concentrates all his attention fixed on the target, and increasing the effort to hold the line of sight exactly in place increases in doing so the muscular strain of his grip, particularly with the right hand, and this increasing grip results in discharging the

piece. It is impossible to make a poor hit in this method of firing.

14. It is absolutely essential, in order to make such corrections of the rear sight as to bring you in the bull's-eye, that you shall have acquired the invariable habit of knowing exactly where your line of sight hit the target at the instant the piece was discharged. This is known as "calling your shot," and you should do it honestly for your own benefit in all aiming exercises. Then later, on the range, if your hit is too low, you will know whether it was the fault of your hold at the instant of firing, or the fault of the amount of rear sight elevation. It is pathetic to see a man constantly re-adjusting his rear sight, trying to correct faults in holding. It is beautiful to see a man sure of his hold, skillfully readjusting his rear sight and bringing his hits accurately into the bull's-eye. And it is all a matter of being absolutely sure of the point of aim at the instant of discharge. To acquire this, as well as to insure absolute immovability of the piece as you discharge it, you must hold it immovable after snapping the trigger in practice, continuing your hold and keeping the line of sight on the bull's-eye. See if you derange it ever so slightly in letting the striker down.

15. In the rapid fire exercises, of course, you will find it easier to lower the piece from the shoulder each time, to re-load. That is, it is easier to do this than to take yourself in hand and learn to load easily and surely, retaining the piece at the shoulder. But by so doing you are not only handicapping yourself in losing time, but you are sacrificing accuracy by introducing changes in your hold and in the support of the rifle. A little thorough practice will make it easy for you to retain the piece at the shoulder, a great advantage. You can then give plenty of time to accurate aiming.

16. Without ammunition your bolt works easily, and it is immaterial whether it be brought the entire distance to the rear and shoved completely home, so you are likely to acquire habits of carelessness that will result in miss-fires

on the range. Therefore, in practice take a firm grip of the bolt handle in the crook of the forefinger held there by the thumb. Bring it back with a smash and shove it forward and down home as though trying to break it. You will need to put this strength in it when using ammunition, and practice will have given you the habit of doing it easily and surely.

17. In firing *kneeling*, do not let the *point of your elbow* rest on your knee, an unstable support. Put it over in front of your knee with the back of the elbow supported on the knee in the steadiest position you can find. Practice this position until you can drop into it instantly and accurately without having to shift anything.

18. The *prone position* is easiest, giving greatest steadiness to the piece. *Beginners should have their first experience in actual firing from this position.* Here they may be sure of their hold and acquire confidence in themselves and their rifles before attempting the more difficult positions of kneeling and standing. The left elbow is on the ground, directly under the rifle, and the rifle itself must not be supported by the muscles and flesh of the left hand, which introduce trembling, but should rest in the palm of the hand directly on the *upper end of the bony column* of the forearm. This gives it as solid a support as though you were resting it on a log. You lose all the benefit of this the instant you raise the barrel off this bone by closing the left hand and taking the barrel into its grip. You see this requires you to make changes of elevation by moving the butt of the rifle with your right shoulder, just as you would have to do if aiming over a log. As you settle into position of approximate aim you adjust the matter of elevation of the front sight by proper movements of your body. Having once gotten this correct you will not change it while firing your score. You will find it most helpful to make a slight hollow in the ground for your left elbow, and to keep it there during the string.

19. While the use of the sling may be awkward to you *at first, you will* be well repaid for practicing with it until you use it easily. It will then be most helpful. Do not be afraid of breaking it; particularly in the prone position you put a large proportion of your weight on it. An important thing is to put the *same amount* of weight on the sling in each shot.

20. The great advantage of gallery practice is that, there being no recoil to induce nervousness or flinching, it affords the soldier an opportunity to get perfect coordination between holding his breath, perfecting his aim, and discharging his piece. And this is what he should be striving for each time he fires a shot. In fact, this coordination is the one real secret of good shooting. Anyone can point a gun quite accurately. Few can be sure it was still pointed accurately at the instant of discharge.

21. In each rifle the graduations for the rear sight are correct only for the particular conditions that existed when they were determined by experiment at the factory. Therefore, each soldier should determine the *zero of his rifle*. Thus, to fire at any given range, as 500 yards, he may find it necessary normally to take an elevation so much greater or so much less, say 25 yards, than the 500 graduation mark. In the same way his windage zero may be a little to the right or left. He determines these for himself by careful observation of his hits and sights while firing on the range.

22. There are many rules and explanations given for making corrections of the rear sight to meet atmospheric changes of wind, light, etc. The simplest rule, that cannot lead to confusion, is "move your rear sight the way you want your bullet to go." Learn this, and do not try to learn any other. If you forget this rule, and men have done it in the excitement of record practice, you will recall it by remembering what everyone always knows, that you raise your elevation to make your bullet go higher.

23. A man who is confident of his hold, and who understands an intelligent use of his rear sight corrections, will always maintain exactly the same point of aim, and find his target by changes in the rear sight. The man who finds his target by shifting his aim to different points in the landscape has not really got anywhere if he does hit the target.

24. Experience will be your best teacher in learning to estimate the effect that various winds will have on your bullet. A transverse wind is going to carry your bullet more or less in the direction of the wind; therefore, to correct it you want the bullet to go more in the direction against the wind. Applying the above rule, move your rear sight in that direction. If the wind be with the bullet it will increase slightly the height of the hit. If the wind be against the bullet it will decrease the height. You correct for this by changing rear sight elevations.

25. Estimating Distances.—For actual work in the field this is quite as important as ability to shoot. Particularly at the long ranges, it is true that the more accurately you shoot the surer you are to miss if your range has been incorrectly estimated. It is an application of this truth that underlies the statement that a company of but moderately good shots will get more hits on the battlefield than will a company of experts. Few commanders, however, have shown such faith in theory as to prefer the poorer shots. They prefer rather to trust to a fairly accurate estimation of the range. If you have ever fired at 1000 yards range you will appreciate what a difference of 25 yards in your elevation will make in the position of your hit. A difference of 50 yards is hopeless. You will appreciate now the real necessity of being able to estimate ranges with fair accuracy. The splendid shooting qualities of our rifles result in the bullet going just where it was directed, and put it up to the soldier to direct it correctly. This means that he must have the correct elevation. This means in the field that somebody has got to guess the correct elevation, that is, guess the correct distance to the object fired at. Every man should have facility in this, and may acquire it by practice whenever he is out in the country. You should be familiar with the following principles:

Objects seem nearer:

(a) When the object is in a bright light.

(b) When the color of the object contrasts sharply with the color of the background.

(c) When looking over water, snow, or a uniform surface like a wheat field.

(d) When looking from a height downward.

(e) In the clear atmosphere of high altitudes.

Objects seem more distant:

(a) When looking over a depression in the ground.

(b) When there is a poor light or fog.

(c) When only part of the object can be seen.

(d) When looking from low ground upward toward higher ground.

26. The following methods of estimating long distances are useful:

(a) You may decide that the object cannot be more than a certain distance away nor less than a certain distance; take the mean of the two as the range.

(b) Select a point which you consider half the whole distance. Estimate this and double it; or divide the distance into a certain number of lengths which are familiar to you.

(c) Estimate the distance along a parallel line, as a road on one side, having on it well-defined objects.

(d) Take the mean of several estimates made by different persons.

27. Every man should have a well-defined mental picture of a unit of measure, 50 yards, 100 yards, 200 yards, whatever it may be; something that he has well fixed in his own mind. After each experience on the target range you will have a pretty good conception of how objects look at 200, 300, 500 and 600 yards distances. Acquire facility in estimating from a prone position as well as standing, because in the presence of the enemy, you will have most practice in estimating from the prone.

CHAPTER XVI

MAP READING AND SKETCHING

1. THIS chapter is designed for *self-instruction* in what is such a bug-bear to most military students, and yet is so simple that I have seen school children learning to read their fathers' military maps as a diversion. You take it up some evening at home, instead of the Sunday supplement puzzle, follow the directions faithfully, and see how soon you have a mastery of it. In order ever to participate in that most interesting form of in-doors instruction, map maneuvers, or to conduct a patrol cleverly in an out-door problem, you have got to be able to read your map quickly and accurately. This means that you shall have acquired the facility to look at a contoured map, and at once get a mental picture of the topographical features, see the hills and valleys as they are. You may gain this facility only by practice. Picking out one feature at a time is no more map reading, than picking out one note at a time is reading music. Each organization should have such a supply of contoured maps, as will allow one for the personal use of each member. These can best be had from the Book Department, Army Service Schools, Fort Leavenworth, Kansas. Send for their price list, and select the ones you want.

2. As a first lesson in reading, follow the different roads, and determine whether you are going up hill or down hill, just where the grades change, and whether the hills are steep or not; leave the roads and consider sections of country, pick out the valleys and the hills, determining whether the slopes are convex or concave; give yourself many problems in visibility until you can make a quick estimate that is fairly accurate in any given case. You will be surprised to find how soon these contours will make actual pictures to your eye of hills and valleys.

3. First to understand "contours," and then actually

to see the ground forms they represent, will require you to use a little imagination. Like the lines that represent roads, rivers, etc., the contours are representations on the map of actual lines on the earth's surface, only the contour lines are not visible as the roads are. The easiest way for you to imagine them on the earth's surface is to think of them as shore lines in case the land were covered with water up to a certain elevation. For example, consider any given area, and that it is inundated so that the top of the highest hill just shows as a small island less than ten feet high. This shore line will be the highest contour line in this section. Assuming that the contour interval is ten feet, let the water fall ten feet and we have a new shore line, the next lower contour line. Other hill tops may now have appeared above the surface, and their shore lines will make other complete or joined contour lines. Assume that all the shore lines are actually marked on the surface of the ground, say by plowing a furrow at the water's edge. Continuing this process, the water receding to ten feet less of depth each time, and at each ten foot level the shore lines marking the next lower contour lines, in time all of the ground in the section considered will be exposed and its entire surface will be marked by these furrows, or shore lines, which will show accurately ten feet differences in elevation throughout the section. The section may now be mapped, and these shore lines be represented as other features are, and they become the contours of a military map which pictures the ground forms to the trained eye.

4. To help to understand the land forms represented, think how the distances between the shore lines would be affected by the slope of the ground under the water as it receded. For example, standing at any given shore line, if the bottom shelved off very gradually as the water fell ten feet you would find it a considerable distance to the next shore line; if the bottom shelved off abruptly, it would be a very short distance to the next shore line; if your shore were part of a precipice, the next shore line

would be directly beneath you, and the two corresponding contours on the map would be coincident. Therefore, the nearer the contours are together on the map the more abrupt slope.

5. These contours are numbered on the map to show their elevation above sea level. You are moving on a dead level when you move along one of these lines. You are changing grade up or down when you move in any direction across these lines, and you can tell whether up or down by reference to their numbers. In determining land forms, if you are moving up grade and the contours bulge towards you they represent a hill, if they bulge away from you they represent a valley; again, the contours change direction in abrupt points at the bottom of valleys, that is, where they cross the actual watercourse; they change direction around the fronts of the hills in softer curves so, generally speaking, changes of direction in points represent watercourses and, and in round curves, hill slopes. Small closed contours generally represent hilltops, though they may rarely be depressions. Learn to glance at the nearest watercourses, and common sense will generally tell you whether you are going up hill or not. Water always runs down hill, and away from a watercourse in any direction except down stream is sure to be uphill. It will help you to read contours if, as you ride in the country, you will observe the land forms about you, and imagine where the shore lines would lie if marked, and how they would look on a map. Take the simplest land form first, a round detached hill. When you can imagine that represented on a map, take an irregular hill, and so work up until you can see how the lines would follow around the various forms of a complicated terrain.

6. In studying a map, assuming that we are standing on the top of a hill and looking down its slope, if the contours of the hill grow further and further apart as we approach the bottom, its surface grows gradually less abrupt, is dished or concaved, and we can see the whole slope. If, on the contrary, the contours are nearer to-

gether as we approach the bottom, the slope grows more abrupt, is convex, and we will not be able to see the whole surface.

7. In order to use your map as a patrol leader in selecting a route that cannot be observed from a given point, where you may assume the enemy to be, you must be able to determine the question of *visibility*. This is an interesting problem to which you should give much practice. At first consider the earth's surface devoid of obstructions, such as buildings, trees, etc. Take two selected points on the map, connect them by a straight line, and if the contours which this line crosses show that there is no hill or ridge between the two points that is higher than the lower of them, then each is visible from the other.

8. It is when ground rises between the two points that is higher than the lower point that you have to solve the question of visibility. This is done with mathematical accuracy by determining graphically the points in question on a cross section of the map. For example, the question is the mutual visibility of any two given points A and B on any contoured map. Assume that A has elevation 600, B has elevation 540; that the straight line joining A and B on the map is nine inches long, and crosses certain contours that show a ridge 560 feet high lying between A and B; its highest point C, on the line A-B, being distant two inches from B.

9. To determine visibility along this line of sight A-B by the graphical method, you will construct a profile of the ground surface along this line. Lay off on a sheet of paper the same length right line A′-B′, B′ at one extremity, A′ at the other. (Actually do this and you will understand it.) At A′ erect a perpendicular to a convenient height to represent the 60 feet difference in elevation between A and B. A″ is the upper end of this perpendicular. Using ruled paper, for convenience this perpendicular would equal six ruled spaces, each representing 10 feet. (There is no connection between the

scale used for the horizontal distances along the line A-B and the scale used for the perpendiculars representing elevations of points on this line.) Now connect A″ and B′ by a right line, which will represent the actual line of vision between A and B. To locate C on the profile, from the end of the line at B′ take a distance B′-C′ equal to B-C on the map, and at C′ erect a perpendicular, and take a point thereon at C″ equal to 20 feet of the scale you adopted for the 60 feet perpendicular at A′. If this point C″ is above the line of vision, C will obstruct the view, if below it will not. So for any point along the line A-B on the map, its altitude above B may be laid off on a perpendicular erected at its distance from B, and the question of visibility determined by reference to the line of sight A″-B′.

10. But in practice you will not need such accuracy, and a far better method is a quick estimate of the relation of the height of the intervening object to its distance from the points in question. You can make this estimate so nearly accurate that the irregularities and natural obstructions like grass, fences, crops and bushes will be the real determining factor. For example, in the above case, A is 60 feet higher than B. An object 30 feet higher than B would just graze the line of vision if half way between A and B. It would obstruct the view if nearer to B, and would be beneath the line of vision if nearer to A. Take the above ridge at C. It is 20 feet higher than B. It would, therefore, just graze the line of vision at 20/60 or one-third the distance from B to A; or at three inches from B on the map. It is but two inches, therefore less than one-third the distance from B, and it obstructs the view. Work out a few problems like this of your own devising on the map, and you will soon find you have such facility that in most cases you will not even need to measure distances. But you have got to actually do these things. It is not enough simply to read about them.

11. Your general use of a map for practical out-door work will be to guide you through country that is unknown to you. Inhabitants may be hostile, so you cannot ask directions. You will have to depend wholly on the map. To do this you will find when you try it you have got to know all the time *where you are on the map*. So to keep from losing yourself on the map you must refer to it constantly and keep checking up your positions. You are cautioned, however, not to be upset if you find inaccuracies and ommissions.

12. The question is to find your position on the map in case you have lost it. You can do this at any slightly elevated point like a hilltop with distant views to objects that may be recognized on the map. First of all hold your map flat and oriented—that is, with the arrow of the map pointing to what you know to be the north. Now begin trying to locate prominent objects in the landscape that you may possibly recognize on the map. Let us say you see a distant village lying perhaps two or three miles to the southeast. There may be a half dozen villages on the map, any one of which may be this. You see an unusually big hill, perhaps four or five miles due southwest. This will help determine which village. With your glasses you pick up a bridge crossing a good sized stream, perhaps two miles away due south. And so on, each of these objects helps determine the others, until in time you ought to be sure of having located on the map two of the objects you see in the landscape. This will locate your position on the map closely enough, for you are at the intersection of the two lines of sight to these two objects.

13. If you need to make sure of your *exact position* on the map, you may now find it by holding the map flat and oriented, then lay a "straight edge" on the map, pivoted on a pin stuck in the map at one of the points you have recognized, and, standing behind the map, sight the straight edge at this object in the landscape. Your position is somewhere along the line of this straight edge. Draw the line on the map with a pencil. Transfer the pin to the second point you have recognized and located.

Sight the straight edge, pivoted on this pin, on the second object, and its intersection with the first line is your exact location. Now don't get lost again.

14. To determine the north without a compass, hold your watch horizontal, pointing the hour hand directly toward the sun. You may determine this by seeing that the shadow of the hour hand is exactly under the hand. The watch in this position, the line that bisects the angle between the hour hand and XII o'clock is the north and south line, south being toward the sun.

15. The true north on a map is indicated by a full pointed arrow, the magnetic north (where your needle points) by a half-head arrow. Or the first by a long arrow, and the latter by a shorter one. To *orient your map* hold it flat and horizontal and turned in such a direction that this arrow showing the magnetic north is parallel to, and pointing in the same direction as, your compass needle pointing north.

16. Every map also has its scale, which you consult to determine distances. This may be expressed in words, as "one inch to the mile"; or, graphically, where a right line is drawn and divided into equal parts, each division representing so much distance, stated in connection with the scale; or the scale may be represented in the form of a fraction (called R. F.), in which case the denominator states the number of lineal units on the ground that are represented by one unit on the map; for example, R. F. 1/63360 means that 63360 inches, feet, yards, or meters on the earth's surface are represented on the map by one inch, foot, yard or meter as you choose. To understand the *conventional signs* used for representing the various objects on the ground, go to your Field Service Regulations, "Appendix 4." These signs are so reasonable that you will quickly learn to use them intelligently.

17. **Sketching.**—The chances are very slight that you will ever be called upon to make any accurate military maps. When the time comes that these maps must be made, men who have had training will probably be de-

tailed to make them. To acquire facility in map making requires time for practice that you can ill afford to give. What you must have, beyond the ability to read a map, is an ability to make such a sketch of any route you may take, that it would serve as a guide for another. That is fundamental. Any ability you may acquire in addition, which enables you to add military information to this route sketch will increase your value as a patrol leader by just so much.

18. Text-books on the subject of sketching are too formidable with their pages of mathematics for the construction of various scales, and descriptions of instruments provided for determining slopes, elevations, distances, etc. It is the general case that when a soldier has had occasion to make a route sketch, none of these instruments were at hand, generally not even a sketching case; and good enough sketches have been made without their use. In any event it is enough for you to know how to take any piece of paper, and, as you follow your route, make a sketch of it that will serve as a sure guide to another.

19. As to the *scale,* if you are riding on horseback, and your horse walks about four miles an hour, and trots at about eight miles an hour, there is your method of determining distance. When he has walked seven and one-half minutes by your watch, or trotted three and three-quarters minutes, he has covered a half mile; if you are on foot, and walk at the uniform rate of three miles an hour, each twenty minutes of walking means a mile of distance covered, and so on. Thus, by taking time from halt to halt, you learn the distances between them. Now to put these distances on the map— if you accept the convenient scale of one inch to the mile, your half mile distance on the road becomes a half inch of distance on the map, and so on. This scale will be as accurate as the rest of your map, and its irregularities are as likely as not to fit in with other inaccuracies and make a reasonably accurate result. Anyone can certainly *understand the use of* this scale.

20. Now to make the sketch. To put on paper a reasonably true representation of the road, showing its directions and distances. The first thing is to have your paper smooth and flat. If it is not part of a firm pad or book, fasten it to a smooth board or other flat surface. Your tools will be a pencil, a graduated ruler or other "straight edge" (the carefully folded edge of a piece of paper does very well), a compass whose north and south line is so marked that you can readily place the compass on your paper with this line parallel to your arrow, a watch for determining distances, and an eraser for correcting mistakes.

21. Now go to the point whence your route sketch is to begin. Face in the direction of the road you are to take, mark with your pencil at the bottom of the sheet a point which shall represent the beginning of the road. You usually know the general direction of your route. If it is going to bear to the left start from a point nearer the lower right hand corner; if it is going to bear to the right start from a point nearer the lower left hand corner. Your next step is to draw a distinct line on the paper, out of the way of your sketch, representing the north and south line of the sketch. To do this, hold the paper flat and horizontal in front of you, as you face the general direction of your route, so that the route may be laid out upon it to the best advantage. Place your compass on the map, near where you want to place the arrow, turning the compass box, not the map, until the needle reads north; and now draw the arrow, parallel to the needle, or approximately so. Now place the compass box so its north and south line is exactly on your arrow, both pointing north; revolve the sketch, not the compass box, until needle lies exactly in the N. and S. line. This is orienting your sketch; it must be held thus oriented whenever you are determining directions at any station.

22. The next step is to draw the line representing the *first section of* your road. If you wish to be quite ac*curate in your* directions, stick a pin in the paper at the point you have assumed for this initial station, pivot a straight edge against it and, holding your paper oriented as above described, aim the straight edge in the direction of your road, then draw a line lightly from the pin along the straight edge in that direction for a short distance, remembering that a half inch will mean half a mile of road. *Now enter on the map such information as will exactly identify the initial station of your route*—so anyone can tell where your route started.

23. You are now ready to mount up and start down the road. Assuming that the road is straight, or practically so (you can make no note of slight turns that do not effect the general direction of the road), let us say that you trot uninterruptedly for three and three-quarters minutes, and have passed no object of military interest that you are going to try to represent. You have covered the first half mile, but there is no special advantage in halting and making another station here. Let us assume that you see at some distance ahead a cross-roads. Instead of halting or slowing up you continue the uniform trot until you reach the cross-roads. Halting here you observe that you have been trotting for seven minutes. You have traveled just a little short of a mile in a generally direct route, therefore you are at a point on the indefinite light line you drew from the initial station a distance of a little less than an inch from that station. Move your pin up to this point, draw the line distinctly between the two points, now orient your board accurately with the compass needle as before. Let us assume that your road here changes direction a few degrees to the right. You may now sight again with your straight edge along the new direction, and represent it again by a new light line. Draw in the cross-roads, terminating the lines at short distances unless you can see positively that they go to some point in sight which you wish to represent on the map. Information as to where these roads lead may be written opposite them on the map. Wherever the route makes a change in its general direction you must make a station to determine and plot on the map this new direction.

24. In riding your next course let us assume that you cross a stream which you wish to represent, and pass a forest at the right of the road. As you trot along your course you are alert to observe the country on both sides, watching every object that should be represented on the map. You will locate each by making a mental note of the time by your watch at which you were directly opposite it. For example, you note a stream appearing at right angles to the road on the right hand side when you have trotted one minute, it turns when within about 200 yards of road and flows parallel to it and at the end of two minutes trotting turns toward the road, crosses it, and flows directly off at right angles to the road on the left hand side. The mental notes that you have made are the time it appeared, the direction from which it appeared, its direction while near the road, the time at which it crossed the road, the direction in which it disappeared, the direction of its flow, and the nature of the road crossing. If you find difficulty or confusion in keeping these in your mind, it is very easy, even when trotting, to make sufficiently lucid notes on the margin of your paper to enable you to put this data on the map proper at your next halt. Continuing your trot, at the end of three minutes you come to the near edge of the forest on the right hand side of the road, and trot for three-fourths of a minute alongside of this forest. You decide to halt in this case at the end of your half mile to sketch in the data you have gained. Your station, of course, is a half inch along the light line indicating the direction from your second station. One minute's trotting is practically one-eighth of a mile, of course a shade less. This will locate at an eighth of an inch from your second station the appearance of the stream on the right hand side of the line. If the stream was 250 yards from the road that also is about an eighth of a mile, so you will show it at about an eighth of an inch to the right of the line of your road. It con-

tinues there for about an eighth of a mile, one minute, then turns to the left and crosses the road. In showing the stream crossing, indicate its nature. If a bridge, how long approximately, of what material, and how high above water. This data may be written to one side. Your forest ended exactly at this third station, it extended for three-quarters of a minute trotting, three-quarters of one-eighth of an inch is accurate enough.

25. This gives you an idea of how simple it may be to begin the practice of making route sketches. You can easily work in this fashion as fast as a cavalry column will march. If mounted, you should have a man with you to hold your horse at each halt, otherwise you will have to tie him, as it is almost impossible to hold him and your sketching board at the same time, especially in fly time. One of the most important things in a route sketch is to be sure to indicate every possible road that branches off from the route you are sketching, to prevent uncertainty as to which is the right road to follow. You will soon gain facility enough to enable you to indicate houses and all other objects of military interest. You can always determine directions to any object of interest by sighting along your straight edge from any one of your stations to the object. If you wish to locate this object on your map, draw a line along the straight edge as you sight from each of two different stations far enough apart to give a good angle, and the intersection of these two lines will give its location on the map with sufficient accuracy. These lines should always be light and should be erased as soon as their object has been accomplished.

26. There remains the one difficult thing, to represent ground forms. It is never expected in this kind of sketch to make accurate contours. A very rough approximation to them may be made, however, to represent hills and valleys, and even to show the grades of the road. To do this you should first get clearly in mind, as described in map reading above, a picture of what the contour lines would be. You

are going to try to represent a hill beside your road by approximating these lines. These approximations are called "Form Lines," as distinguished from accurate contours. Unlike the latter, they have no reference to elevation above sea level, and only show roughly the elevation above the general land surface thereabouts.

27. You must first understand that any two contiguous lines represent a difference in elevation of so many feet—whatever you assume this interval to be. An interval of 20 feet is about right. Now estimate the height of this hill above the general ground level in this vicinity. If you estimate it at about 100 feet you may use five form lines to represent the hill. Here is a very important caution—do not sketch ahead on the assumption that the hill is going to be a certain shape. You will have to erase. Do not sketch at all, until you have ridden far enough to be sure of the shape of part of the hill at least. If you have reached a point in map reading where by looking at the contours representing a hill you can construct a mental picture of the hill itself, what you have to do now, and what you may do by a little practice, is to reverse this process, and, looking at the hill, draw on your paper such lines as will represent its height, general form and roughly the shape of its slopes.

28. This process is recommended to you, and it is believed you would find it an interesting diversion for some of your country rides. Then sometime on patrol duty, when you have reached a point of observation and obtained important information for your commanding officer, which you can make clear to him only by showing, in a sketch, the position of the enemy and roughly the natural features of the terrain, you would be able to do so not only to his satisfaction but to your own credit.

29. And now let me urge you to take up this important part of your training at once. Do not pass it up as hard or uninteresting. You can do this work alone, and *entertain yourself* while doing it.

Having first learned to read a map, take your first lessons in sketching from the map, rather than in actual country. Select a route on the map, and imagine you have been ordered to patrol it in hostile territory, furnishing a route sketch with your report. If you want a busy evening, include in your imaginings what you will do with the members of the patrol, as you advance, and as you halt at each sketching station.

30. Take pencil and paper, compass and ruler, and as you proceed along the route in imagination, select where you would have to make sketching stations; from the scale of the map determine each distance, station to station, and figure how long it would have taken you to travel it, say at a trot; so many minutes trotting means so much distance on your sketch—lay it off; determine what data you should put in at each halt, how you would have gotten it in actual practice, and put it on your sketch. Go through the process of orienting your sketch at each station, sight along the ruler for the direction of the next section of road, and draw it as you would out of doors. Study the contours of a hill beside the route on the map, until you can see the hill as it looks in nature; then draw the form lines on your sketch to represent the hill. In this way you may familiarize yourself with the methods, so when you take them up out doors, they will not seem so awkward.

31. Now take a Sunday morning and go out for a country walk, or a ride with someone to hold your horse, and bring back a route sketch of some part of your trip. Another time go out, and, studying some uniformly shaped hill, try to represent it by form lines; then take a small ridge, and gradually more complicated forms. Do not attempt too much at first, and you will pleasantly surprise yourself at your ability. Later you may pleasantly surprise your commanding officer at the excellence and value of your report after some patrol duty.

CHAPTER XVII

CARE OF ARMS AND EQUIPMENT

THIS is essential training for all soldiers before field service may be undertaken. The ready replacing of lost and damaged articles in peace time, gives a wrong impression. Take pains rather to impress them with the fact that in war these articles may not be replaced, and that their absence or unserviceability at a critical time may prove most disastrous. This is equally true for the Militia, where pressure of time seems generally to justify leaving all the care of arms and equipment to the employees at the armory. Every one must know the importance of keeping everything clean and in serviceable condition, and how to do it. It would seem practicable to arrange for instruction in caring for some one article at each regular drill, until at least the most important ones had been covered.

The following notes, "based on long experience and publications of the Ordnance Department," prepared by Sergeant R. J. Hughes, Co. L, 2d U. S. Infantry, Sergeant Instructor Conn. N. G., and published as Bulletin No. 2, 1st Cavalry District, are reprinted here as covering this subject most concisely, and as a means of putting this information into the hands of each individual soldier.

Castile Soap.—For washing leather; lather thickly and wipe off; only cold water, and very little of that.

H. & H. Soap.—For woven equipment only (belts, suspenders, haversacks, canteen-covers, horse-covers, shelter tents, etc.); use only cold water, and no other soap. Avoid the use of scrubbing brush except to remove stains on belts and suspenders, as its use tends to fray and wear edges.

Khaki Blanco.—When applied lightly and evenly *with damp sponge* will restore partially worn and unsightly belts, canteens, leggings, etc.

Neatsfoot Oil.—For use upon marching shoes and halter straps to keep soft and waterproof; also to renew life in leather that has become hard and dry. The use of this oil on horse equipment other than on halter straps is not recommended. If used on halter headstalls the action of the oil in contact with the horse's head causes the hair to come off where it touches. Apply sparingly with a moistened cloth after leather has been cleaned.

Cosmic.—A preservative for the metal parts of rifles, revolvers, sabre blades and bits not in use. Never apply to working parts of rifles and revolvers in use as it will gum them, especially the firing pin spring of the rifle which if gummed by cosmic will so retard the action of the spring as to cause misfire. If too thick apply slightly heated. Gasoline is the quickest remover.

Linseed Oil.—For rifle and revolver stocks, and for preventing the swelling by rain water of the wooden parts of jointed shelter tent poles. Apply with cloth or brush in, or before going to, camp. It can also be used on other tent poles to prevent dry rot.

Sperm Oil.—For lubrication of metal parts of rifle, revolver and sabre; also bits and buckles, and to prevent the rusting of same. The oil can in the rifle butt should be kept full at all times.

Propert's, Miller's, or Other Harness or Saddle Soap Containing a Large Percentage of Oil.—For cleaning and preserving and making the leather soft and pliable. After removing all dirt and stains from the article, apply the soap with a damp sponge, making a good lather. It must be remembered that the rough or unfinished side of leather will absorb the oil and life-giving properties of the soap more readily than the glazed finished side of the leather. When nearly dry polish with a soft dry cloth.

Sal Soda.—For cleaning bore of rifle immediately after firing, using a saturate solution and the usual cleaning patches; then wipe and dry and oil. Due to rifle "sweating" further cleaning may be necessary later—

every rifle must be **watched** until it is known that the cleaning process is complete. This solution will not remove rust or metal fouling. Rust may need cutting out with kerosene or may, preferably, be loosened with sperm, 3-in-1, Hoppe's No. 9 Solvent, etc., and then wiped out. The last named preparation is useful for all kinds of fouling. In the absence of sal soda **hot water** has been used with excellent results. For treatment of metal fouling see below.

Scouring Material, as Lavoline, Etc.—For scouring meat-cans, knives, forks, spoons, tin cups, sabre blades, bits, etc., apply as per directions upon container. It is usually a gritty preparation *never to be used on rifles or revolvers.* Use with scrubbing brush or wire cleaner.

Sponges are to be used in lathering leather with the various soaps but not for oils.

Russet Leather Dressing.—Apply like ordinary russet shoe polish after leather has been **cleaned,** and, if necessary, oiled. Not recommended for general use except on sabre belts, sabre knots and cartridge boxes.

Ammonia Preparations for Removing Fouling and Lead From Rifle Bores.—It should be understood that the ammonia preparations supplied organizations are intended primarily for use in removing metallic fouling (cupro-nickel deposit) due to firing. The compound made therefrom can be used for removal of rust, but it is not intended for this purpose and there are several objections thereto; it is expensive and will set up a violent rust if not wiped absolutely dry. The actual damage done by metal fouling lies in the fact that it is gradually deposited on top of the other regular fouling from previous shots and, by thus forming a hard coat thereover, prevents removal of same and may cause ultimate pitting of the bore. The preparation of this solution from the ingredients supplied is indicated as follows:

Pulverize and mix 2 medium heaping spoonfuls of *the ammonium* persulphate with 1 of the ammonium carbonate (ordnance spoon); add ⅜ pint of the ammonia and ¼ pint water, stirring thoroughly; stand at least ½ hour. The best way to apply is to plug the bore of the rifle at breech with a cork, fill barrel and plug at muzzle or, better yet, slip a tight piece of rubber tubing over muzzle and fill up over muzzle, so as to avoid any evaporation within bore or spilling upon barrel or other parts, as this solution corrodes steel whenever allowed to evaporate upon it. Leave in bore 30 minutes, remove and wipe absolutely dry. Mixture can be used repeatedly but should be kept separately and not mixed with fresh solution.

Storerooms and Storage.—Company storerooms should contain no property that is not clean. Commanders should take steps to get everything in first-class condition in this regard and keep it so by a systematic effort along this line. By requiring the chiefs of platoons and squad leaders to assist the quartermaster sergeant it can be accomplished.

Storing Saddle and Bed Blankets, Articles of Clothing, Etc.—All these should be cleaned or laundered before placement in store. The general rule is to have nothing therein unfit for immediate issue, and in considering this, as a test, assume yourself to be the recipient.

Canteens should be scalded inside and outside of mouthpiece before putting away or reissue. If you have had 70 canteens in use remember that probably a hundred persons have had them to their mouths—then recall the present-day drinking-cup laws and the need therefor. The same principle applies to **tin cups** and all **messware.**

Camp Kettles, Bakepans, etc., should be thoroughly scoured to remove all food particles, soap, grease, soot, etc. Before storing it is well to smear with some vegetable or animal grease as lard, mutton tallow, bacon grease, etc. Mess chests and Troop ice boxes should be scalded and rinsed with water containing saltpeter and thoroughly aired before and after using.

Field Ranges are a very important item of property, and deteriorate rapidly without constant care either in or out of use. They should be kept in the best possible condition, ready for instant operation at all times. Ash-box to be cleaned out—grate wiped off—ovens wiped—flues well cleaned. Grease all over or apply some preparation as stove polish to preserve as well as add to appearance. Pipe joints should be freed of soot, dents flattened out, ends straightened, etc., and greased.

Before going to camp the organization commanders should thoroughly instruct their men as to the importance of cleanliness and how to maintain it for each and every article. Every man should start with clean arms and equipment and be made to understand that same must be kept in the same condition. Explain that the standard of cleanliness for the soldier—in garrison or in the field—is no less than that in his own home.

In the regular service the unit system of supervision of these details by chiefs of platoons and squad leaders is in this as in everything else used to maintain compliance and to assist the troop commander, and by constant practice becomes habitual with everyone.

The Rifle.—While drilling always have the piece cocked and on the safe. When the company is dismissed see that all the triggers are snapped on the empty chamber. If left cocked the firing pin spring becomes too weak to fire the cartridge. A large percentage of the rifles in the mounted service are rendered inaccurate by reason of the carelessness of the trooper in laying aside his rifle to saddle and unsaddle his horse. If the rifle is dropped on the floor it strikes on the front and rear sight. A hook or nail on which to hang the rifle should be placed on or near a heelpost, or a wooden rifle rack placed in some convenient place in stable, preferable near the exit.

The Revolver is rendered unserviceable in most cases through ignorance of mechanism. By attempting to cock while cylinder is open, the cylinder spring is broken. By keeping the finger on the trigger and trying to cock the piece with the thumb at the same time, the hand spring is broken. By driving shelter tent pins with the butt the swivel and stock is bent or split.

The Automatic Pistol.—Never place the trigger finger within the trigger guard until it is intended to fire, and the pistol is pointed towards the target. The pistol must be kept clean, free from rust, and properly oiled. Excessive oil left in the mechanism will cause the parts to gum and work stiffly. Care must be exercised in inserting the magazine to insure its engaging with the magazine catch. Pressure must be entirely relieved from the trigger after each shot in order that the trigger may re-engage with the sear. To remove cartridges not fired disengage the magazine slightly and then extract the cartridge in the barrel by drawing back the slide. Care must be exercised to insure that the disconnector is properly assembled to the sear. The hammer should not be snapped when the pistol is partially disassembled. The stocks need never be removed, as the pistol can be dismounted and assembled without removing them. Use no hammer, either in assembling or dismounting. Magazine: Reasonable care should be taken to see that the magazine is not dented or otherwise damaged. Never insert the magazine and strike it smartly with the hand to force it home, as this may spring the base or the inturning lips at the top. It should be inserted by a quick continuous movement.

The Sabre and Sabre Scabbard.—Never use sand paper or coarse emery cloth on a sabre blade. If rusty, use fine emery dust and oil mixed; if gummed with oil and dirt, use sal soda, rinse with scalding water, dry, burnish and give a light coat of very fine oil, such as 3-in-1. If while on drill or parade, the blade becomes wet with sweat or rain, dry it thoroughly before applying oil. Considerable water will enter the mouth of the scabbard during a rain and lodge inside, and if the blade is returned thereto, even though the blade be slushed with cosmic, it will rust over night. Therefore, the scabbard must be hung up by the cord and allowed to dry, or held over a fire. In cleaning and polishing a blade use an old pair of cotton gloves, as the perspiration from the hand is sufficient to rust the same.

The Guidon.—Never case a wet or damp guidon. Tighten the ferrule every time you turn out mounted.

The Saddle.—To clean, strip saddle of everything except coat straps which should be unrolled; wet sponge with cold water and castile soap to remove all dirt and stains, using as little water as possible on all parts including inside of stirrup hoods; then with a damp sponge from which every drop of water has been squeezed, cover all parts with a thick lather rubbing well into the rough side, especially the unfinished side of stirrup straps. The hair part of the cincha should first be dry rubbed and brushed to remove mud and dust, and then washed to remove sweat. This is most important as sores at the girth place are often a direct result of failure to properly clean a cincha; and the quarter strap and cincha strap safes are of no less importance; they should be especially soft, pliable and clean.

The Bridle, Curb and Watering.—Every strap should be unbuckled and cleaned with castile soap, while the bits as soon as detached should be washed and scoured; lather parts when dry. Lather thickly each strap and rein with saddle soap and let it dry in, when nearly dry clean and polish with soft dry cloth, being careful to remove all lather around buckles; polish bits and curb chain, apply a light coat of oil and assemble.

The Saddle Bags.—On returning from the camp take inside canvas bags out and wash and hang in shade to dry. Clean, lather and dry, saddle bags most thoroughly before replacing canvas pockets.

Lariat and Strap.—Clean and put away, oiling metal parts with sperm oil.

The Surcingle.—Wash with H. & H. Soap, clean leather as above, oil buckle with sperm oil.

The Nose Bag.—Scour inside and out with H. & H. Soap, use Neatsfoot oil on leather bottom and saddle soap to clean strap; dry in the shade.

The Saddle Blanket.—Always fold damp sides in. When dry use horse brush to remove dust, sweat and mud; turn frequently.

The Currycomb.—To remove dirt from comb when grooming, strike comb on iron bound edge provided for that purpose, and not the tip of the comb. To clean, scrub, dry and apply a little sperm oil to metal at least once a month; use Neatsfoot oil on leather parts.

Horse Brush.—Always place on back to keep bristles straight; use Neatsfoot oil to preserve leather parts

Remounts when received are very often infested with lice contracted in cattle cars and sales stables; the currycombs used in grooming these horses should be disinfected by dipping in bichloride of mercury solution after each grooming, should be kept separate and used on no other horse until all lice have disappeared. The same precautionary measures should be taken with the brushes.

Sabre Belts and Cartridge Boxes.—Keep leather soft and pliable by applying saddle soap to rough side; melt a little russet shoe polish, apply to glazed surface of leather with soft cloth very lightly and polish with dry cloth.

To Fold the Pyramidal Tent.—The tent is thrown toward the rear and the back wall and roof canvas pulled out smooth. This may be most easily accomplished by leaving the rear-corner wall pins in the ground with the wall loops attached, one man at each rear-corner guy, and one holding the square iron in a perpendicular position and pulling the canvas to its limit away from the former front of the tent. This leaves the three remaining sides of tent on top of the rear side, with door side in middle.

Now carry the right-front corner over and lay it on the left-rear corner. Pull all canvas smooth, throw guys toward square iron, and pull bottom edges even. Then take the right-front corner and return to the right, covering the right-rear corner. This folds the right side of the tent on itself, with the crease in the middle and under the front side of tent.

Next carry the left-front corner to the right and back as described above; this when completed will leave the front and rear sides of the tent lying smooth and flat and the two side walls folded inward, each on itself.

Place the hood in the square iron which has been folded downward toward the bottom of tent, and continue to fold around the square iron as a core, pressing all folds down flat and smooth, and parallel with the bottom of the tent. If each fold is compactly made and the canvas kept smooth, the last fold will exactly cover the lower edge of the canvas. Lay all exposed guys along the folded canvas except the two on the centre width, which should be pulled out and away from bottom edge to their extreme length for tying. Now, beginning at one end, fold toward the centre on the first seam (that joining the first and second widths). Then fold over the opposite edge of middle width of canvas. Then begin folding the opposite end, folding the first width in half, then making a second fold to come within about four or five inches of that already folded; turn this fold entirely over that already folded. Take the exposed guys and draw them taut across each other, turn bundle over on the under guy, cross guys on top of bundle drawing tight. Turn bundle over on the crossed guys and tie lengthwise.

When properly tied and pressed together this will make a package 11 by 23 by 34 inches requiring about 8,855 cubic inches to store or pack.

Stencil the organization designation on the lower half of the middle width of canvas in the back wall.

The Gold Medal Cot.—In setting it up, to put on the end spreaders, first put on the end that has not got the sliding slot in the hole; then sit down on the opposite side rail facing the spreader, balancing with your hand on the other side rail; put the bottom of your foot against the face of the spreader near its end, and with the strength of your leg snap it into place. Reverse this to take the spreader off. To fold the cot, having removed the spreaders, pick up the cloth bed along its centre line lifting until the side rails come together with no cloth between them. Keep this cloth clear while you fold in the legs, and you can use it to wrap around the bundle including the two spreaders so as to hold them firmly in place.

CHAPTER XVIII

ARMY REGULATIONS

1. The following paragraphs, based on Regulations U. S. Army, cover the points which all military men should know, for their proper government while in the service. Beyond these, the Army Regulations is a book of reference, to which you should always go for guidance before taking any unfamiliar step in military administration.

2. Your attention is called particularly to the paragraphs relating to the care of public property in your hands. The squad leaders must be made to appreciate their responsibilities in this connection, and they must make it a personal matter to see that each man who joins their squad is duly impressed with the seriousness of his individual responsibility for the proper preservation and return in good condition of all and any government property in his hands. Let this be taken up so thoroughly that your organization may never be criticised for carelessness in this matter:

3. A member of the military forces owes the State and the United States twofold duties, as a citizen and as a soldier. Of these duties neither conflicts with the other, and conscientious performance of his duties as a soldier makes him a more valuable citizen.

4. An officer and an enlisted man of the military forces of the State or Nation is subject to the Military Law, the Regulations, and orders issued by proper authority, at all times whether on duty or not.

5. "All persons in the military service shall obey strictly and execute promptly the lawful orders of their superiors." The question as to whether the order is lawful or not cannot be made a matter for discussion or decision each time an order is received. This would furnish a plea to the captious and mutinous to justify their insubordination. The controlling principle is that unless

an order be so manifestly against law that the question does not admit a dispute the order must be obeyed, and subsequently such redress may be sought as the law allows. If its legality is questioned before obedience, error of judgment would be no defense for its disobedience.

6. "Superiors should not censure their subordinate officers in the presence of other persons, and shall sustain their officers and noncommissioned officers whenever possible."

7. "Superiors shall not injure those under their authority by tyrannical or capricious conduct, or by abusive language." Such conduct or language is cowardly, since the recipient is in a position that makes retaliation impossible.

8. Military authority shall be exercised with firmness, kindness, and justice. Punishments shall conform to law and follow offenses as promptly as circumstances permit.

9. Courtesy among military men is indispensable to discipline; respect to superiors shall not be confined to obedience on duty, but shall be extended on all occasions. Familiarity between officers and enlisted men, and between noncommissioned officers and privates, is inadmissible when on duty. Perfect civility is compatible with the exercise of the strictest command.

10. Deliberations, discussions, statements or remarks, with respect to military matters, whether oral, written or printed, by officers or enlisted men, criticising or reflecting upon others in the military service, are prohibited.

11. Communications and reports with respect to military matters, by officers and enlisted men, shall not be made public without the authority of the officer to whom they are rendered, or superior authority, and then only so much thereof as shall be expressly authorized.

12. Officers and enlisted men shall not seek legislation on military matters, or preference for themselves, except through the proper military authorities.

13. An officer or enlisted man, who feels aggrieved, may apply for redress to or through his immediate commanding officer. Commanding officers shall entertain such request, promptly make full inquiry into the matter, and, where necessary, forward the result of the inquiry to next superior headquarters.

14. The functions assigned to an officer by title of office devolve upon the officer acting in his place, except when otherwise specified. An officer in temporary command shall not, except in urgent cases, alter or annul the standing orders of the permanent commander, without authority from the next higher commander.

15. In the field, in the absence of a commander, the next in rank exercises the command on his own initiative. The custom of the service requires that in all routine, discipline, etc., the temporary commander should generally carry out the policies of the permanent commander. On the battlefield, however, the temporary commander would use his own best judgment as though he were the permanent commander.

16. An officer who succeeds to any command or duty stands, in regard to his duties, in the same situation as his predecessor. The officer relieved shall turn over to his successor all orders in force at the time, and all the public property and funds pertaining to his command or duty, and shall receive therefor duplicate receipts showing the condition of each article.

17. Whenever different organizations happen to join or do duty together, the officer of the line highest in rank, present and on duty, commands the whole.

18. An officer placed in command of a post, detachment, guard or separate force, shall not surrender his command to another officer unless regularly relieved, except in case of sickness or inability to perform his duty, when the senior officer present entitled to command will succeed to the command.

19. An officer of the medical department cannot exercise *command*, except in his own department; but any

staff officer, by virtue of his commission, may like other commissioned officers command all enlisted men.

20. When a commanding officer leaves his station or command, he shall notify his immediate superior and the subordinate officer next in command of the fact, and of the probable duration of his absence.

21. When orders requiring immediate action are received, or the preservation of discipline requires immediate action, the senior officer present entitled to command shall assume command and issue the necessary orders and transmit forthwith to the permanent commander notice of the orders received and issued.

22. An officer called temporarily to a higher command shall notify his immediate superior and the subordinate officer next in command and the latter shall thereupon assume command.

23. To test the capacity of privates for the duties of noncommissioned officers and to give them preliminary training therein, the company commander may appoint lance corporals. They shall be obeyed and respected as corporals. Regulations allow one lance corporal to each company, and in addition one for each vacancy in the noncommissioned grade, and one to replace each noncommisioned officer on extended absence. Captains should take full advantage of this power of appointment, not only to try men out, but to stimulate ambition. Where he may have but one or two, he may do well to make frequent changes, establishing the fact that men may be returned to the ranks without prejudice, by perhaps selecting such an one for appointment to corporal.

24. A noncommissioned officer on his appointment receives a warrant. He may then be reduced to the ranks only by sentence of a court martial, by his own resignation, or by order of the authority which warranted him. The order for his reduction should state the reason therefor, and the date on which it is effective. When reduced, they return to duty as privates; except those who have been enlisted as noncommissioned officers, who are discharged,

25. The commanding officer of a company is responsible for its appearance, discipline, drill, and efficiency; for the care and preservation of its equipment; for the proper performance of duties connected with its subsistence, pay, clothing, accounts, reports, and returns, and for the practical and theoretical instruction of his officers and noncommissioned officers.

26. In the absence of its captain, the command of a company devolves upon the subaltern next in rank who is serving with it, unless otherwise specially directed. If no officer be present, the regimental commander assigns some officer to command it.

27. Captains should require their lieutenants to assist in the performance of all company duties, including the keeping of records and the preparation of reports and returns.

28. The company commander should cause the enlisted men of the company to be numbered and divided into squads, each under the charge of a noncommissioned officer. As far as practicable the men of each squad will be quartered together.

29. In camp, or at posts where companies are not joined in a general mess, the company commander shall supervise the cooking for and messing of his men. He should provide and keep in the kitchen at least two copies of the Manual for Army Cooks. One officer should inspect the food and its issue at each meal, and the kitchens and utensils at a reasonable time after each meal.

The company commander shall cause suitable men in sufficient number to be fully instructed in managing and cooking the ration and shall see that necessary utensils and implements for cooking and field mess furniture are always on hand.

30. Kitchens will be placed under the immediate charge of noncommisioned officers, who will be held responsible for their condition, and for the proper use of rations. No one will be allowed to visit or remain in the kitchen, except those who go there on duty, or are employed therein. The greatest care will be observed in cleaning and scouring cooking utensils.

31. Noncommissioned officers shall be carefully selected and instructed, and always supported by company commanders in the proper performance of their duties. They shall not be detailed for any duty inconsistent with their rank and position. Officers shall be cautious in reproving them in the presence or hearing of private soldiers.

32. Noncommissioned officers shall be examples of neatness, cleanliness and soldierly conduct. They shall be respected and implicitly obeyed by subordinates.

33. Chiefs of squads shall be held responsible for the cleanliness of their men. They shall see that those who are to go on duty put their arms, accoutrements and clothing in the best order, and that such as have passes leave the post in proper dress.

34. Company commanders shall see that all public property in the possession of enlisted men is kept in good order, and that missing or damaged articles are duly accounted for.

35. Strict attention shall be paid by enlisted men to the policing of their quarters or tents. They must keep their persons clean, and be neat in appearance. The hair shall be kept short, and the beard neatly trimmed.

36. Each company, for the purpose of warning for duty, shall be divided into squads in charge of a noncommissioned officer.

37. Each noncommissioned officer should always keep in his possession a list of the addresses of the men under his immediate command or whom he may be required to warn for duty.

38. No officer or enlisted man shall wear parts of civilian dress with parts of the uniform, but shall wear civilian dress entirely, or uniform complete as prescribed.

39. A civil employee or servant shall not be permitted to wear any article of uniform of the kind or pattern described for issue to troops.

40. Enlisted men shall not take their arms apart

except by permission of a commissioned officer under proper supervision, and only in the manner prescribed. The polishing of blued or browned parts of small arms, reblueing or rebrowning, putting any portion of an arm in a fire, or removing a receiver from a barrel, is prohibited. The mutilation of any part by filing or otherwise, and attempts to beautify or change the finish, are prohibited. Pieces shall be unloaded before being taken to quarters or tents, and as soon as the men using them are relieved from duty, unless otherwise ordered. The use of tompions in small arms is forbidden. The prohibition in this paragraph of attempts to beautify or change the finish of arms in the hands of enlisted men is not construed as forbidding the application of raw linseed oil to the wood parts of the arms. This oil is considered necessary for the preservation of the wood, and it may be used for such polishing as can be given by rubbing in one or more coats when necessary. The use of raw linseed oil only shall be allowed for redressing, and the application for such purpose of any kind of wax or varnish, including heelball, is strictly prohibited.

Pistols shall be kept in cases if possible, otherwise in holsters, each marked with the number of the enlisted man.

Sabres shall be kept free from rust, slightly oiled, and always in their scabbards.

41. It is forbidden to use any dressing or polishing material on the leather accoutrements or equipments of an enlisted man, horse equipments or harness, except the preparations approved by the Ordnance Department, U. S. A., for that purpose.

42. The commanding officer of a post shall regulate the manner of rendering honors in the parts of an armory used solely for recreation, athletic exercises or games, such as library, billiard room, bowling alley, gymnasium, bath room. All other parts of a post, except drill rooms and halls, shall, for the purpose of paying honors, be considered as indoors.

43. *In quarters,* or anywhere indoors, soldiers are

supposed to be uncovered as they would be in their civilian homes.

44. Coming indoors an officer or enlisted man uncovers, if unarmed; if armed or on armed duty he does not uncover.

45. A roster is a list of officers or men for duty, with a record of the duty performed by each. Generally details for duty are so made that the one longest off is the first for detail. Details so made are said to be made by roster.

46. All details for duty shall be made by roster to insure an equal distribution of the duties among those liable to such details.

47. In addition to the company roster there should be kept by the first sergeant, the sergeants and corporals, a pocket roster to be used to call the roll when necessary, and to make details suddenly called for when the official roster at the moment is not obtainable. This roster shows the names and grades of the men of the company with columns to the right to mark in pencil the duties they are on or the cause of authorized absence. The first sergeant when not calling the roll, but receiving the reports of the corporals, should have a list of those authorized to be absent, comparing it, as the reports are made, with the latter, so as to be able to report those absent without authority. The roster to be kept by sergeants and corporals should contain the information necessary to enable them to warn men for duty and to account for them.

48. All details for service in garrison and in the field, except the authorized special and extra-duty details, shall be by roster; but officers or enlisted men when detailed must serve whether a roster be kept or not.

49. An officer or enlisted man returning from leave of absence or furlough, or from arrest to duty, if he has missed a tour of duty becomes the first for detail, otherwise he takes his regular turn.

Returned to duty from detached service, extra or special duty, he goes to the foot of the roster.

50. When an officer has been detailed and is not present or available at the hour of marching, the next after him takes the duty. When an outpost has passed the chain of sentinels, or an interior guard has reached its post, the officer whose tour it was cannot take it, unless so ordered by the commanding officer.

51. Duties of the first class are credited on the roster when the guards or detachments have passed the chain of sentinels or an interior guard has reached its post; other duties, when the parties have entered upon their performance.

52. When detachments meet, the command shall be regulated while they serve together, as if they formed one command, but the senior officer cannot prevent the commander of any detachment from moving when he thinks proper to execute the orders he has received.

53. On the return of a detachment, its commander shall report to the headquarters from which he received his orders.

54. The purpose of sick call is to determine for the information of the commanding officer, what men of his command are physically unable to perform their field duties.

55. The names of the men desiring to attend sick call are entered each morning upon a sick report, which is then signed by a commissioned officer of the organization. The names of men who attended the last preceding sick call and were not then marked for duty, are copied on this morning's sick book, and the men themselves required to attend sick call. The book is then turned over to a noncommissioned officer detailed to march the sick squad to the surgeon at sick call, where he presents the sick report to the surgeon. The surgeon examines the men as rapidly as possible and enters his conclusions upon this sick report which he then signs and returns to the noncommissioned officer who marches the sick back to the organization and turns the book over to the first sergeant.

56. **Military Correspondence** shall be plain and con-

cise; statements shall be made in such terms that they cannot be misinterpreted. Names, especially signatures, shall be written plainly. An official letter shall refer to one subject only. Telegrams shall be followed by official copies sent by first mail.

57. Letter paper shall be of uniform size, eight inches wide by ten and one-half inches long, and of sufficient thickness that the writing will not show through. Official communications shall be written only upon one side of the paper used. When more than one page is required additional sheets shall be used numbered consecutively. A margin of not less than one inch shall be left clear on the left of each page.

58. All official communications, whether from a subordinate to a superior or *vice versa,* shall pass through the intermediate commanding officers ("through the channel"), except where specially provided otherwise. In cases of pressing necessity, in which there is not sufficient time for regular communications, the necessity shall be stated and copies forwarded through the channel.

59. All official communications relative to the military service of your State intended for either the military, judicial, or executive officers of the United States, or of other States, or of foreign governments, must be addressed to the Adjutant General of the State, and not through him to any other person or officer, and shall be forwarded to him through the proper channel.

There should be kept in the orderly room of each organization model forms for the use of the members of the organization, showing how communications should be written, addressed, signed, folded, and forwarded.

60. **Orders.**—"A military order is the expression of the will of a chief conveyed to subordinates." Note that the method of expression is not prescribed; the order may be given in writing, verbally, by visual signals, or in any form that has unmistakably conveyed the will of the chief. *Orders are* classified as routine orders and field orders. *Routine orders* are those used in the ordinary administra-

tion of military affairs and are called general orders, special orders, circulars, and orders, according to the circumstances. Field orders are those dealing with tactical and strategical operations incident to a state of war.

61. Note that **Headquarters** is the commander's official residence, or place from which his orders are issued; and that battalions and squadrons are the lowest organizations to have headquarters.

62. Orders issued by commanders of battalions forming parts of regiments, companies, or small detachments are simply denominated "orders," and are numbered in a single series, beginning with the year.

63. An order shall state the source from which it emanates, its number, date, place of issue, and the authority under which issued. It may be put in the form of a letter addressed to the individual concerned through the proper channel.

64. Details of officers and enlisted men for guard, fatigue and outpost duties are orders, but are neither general nor special, and are entered in the respective rosters, and not in the order books.

65. Records and Returns.—The records of military organizations are public property; they should be carefully preserved; and, on the discontinuance of the organization, be turned in at the headquarters responsible for the organization.

66. All officers should acquire the knowledge of making correct reports and returns, and of keeping military books and papers properly; it is the duty of commanding officers to impart the necessary instruction, and require their subordinates to become competent in this line of duty.

67. The use of colored inks, in records and correspondence, except as carmine and red ink is used in annotation, ruling or compliance with specific instructions issued on blank forms or otherwise, is prohibited.

68. In each company there shall be kept one order book, one correspondence book, one descriptive book, one morning report book, one attendance book, one roster, one sick report book, one record book of field small arms practice, one record book of armory small arms practice; property account book or books, separate accounts to be kept for each class of property received and separate accounts with each enlisted man to whom property is issued.

69. Any officer or noncommissioned officer falling into command of an independent unit should consult Regulations, to make sure that he is keeping proper records and making proper returns.

PUBLIC PROPERTY

70. Any officer or noncommissioned officer, becoming responsible for public property other than his personal equipment, should consult Regulations.

71. No arms, equipment or military property of any description shall be loaned.

72. Officers and enlistd men are responsible for the care and preservation of all public property intrusted to their charge, or which may come by any means into their keeping or possession, and shall turn it over to the proper officer.

73. It is the duty of all officers and enlisted men, at all times, to take the necessary measures to preserve public property intrusted to their care in good order and serviceable condition; and they are personally responsible for any loss or damage due to neglect of this duty.

74. The officer in temporary or permanent command of a company or detachment shall be responsible for all public property used by, or in possession of, the command, whether he receipts for it or not.

75. The property responsibility of a company commander cannot be transferred to enlisted men. It is his duty to attend personally to its security, and to superintend issues himself or cause them to be superintended by a commisioned officer.

76. If any article of public property be lost or dam-

aged by the neglect or fault of any officer or soldier, he shall pay the value thereof, or the cost of repairs, at such rates as may be determined according to law.

77. On knowledge or receipt of information that military public property of, or issued by, the government is unlawfully in the possession of any person not in the military service, an officer or enlisted man shall at once report the fact to the commanding officer of the post where he is serving or to which he is attached, who shall promptly take necessary action to recover the property.

78. **Subsistence.**—All those falling in charge of separate commands or charged with feeding them should consult Regulations.

79. In extreme emergency, a commanding officer is authorized to purchase, provide or arrange for, services and materials that are immediately necessary to provide for the care and relief of the personnel, or the protection of the property, of his command; a report of such action containing a statement of the services and materials purchased, and the price thereof, should be made at once to next higher authority.

MILITARY LAW

80. The Military Law also is one of the reference books. But you may become most efficient soldiers without much knowledge of its contents. Besides State laws defining your rights in riot duty, and the purchase of supplies in emergency, which you ought to look up in your own State, it is believed the few paragraphs following will give all you need of law for normal service.

81. All able-bodied male citizens, between the ages of 18 and 45 years, and every able-bodied male of foreign birth, who has declared his intention to become a citizen, who are residents of the respective States, shall constitute the militia, subject to certain specified exceptions. And of those excepted all but one class are liable to military duty in time of war, insurrection, invasion or imminent danger thereof.

82. Whenever any portion of the militia shall be on duty under or pursuant to the orders of a governor, or shall be on duty or ordered to assemble for duty in time of war, insurrection, invasion, public danger, or to aid the civil authorities on account of any breach of the peace, tumult, riot, resistance to process of the State, or imminent danger thereof, or for any other cause, the articles of war governing the army of the United States, the articles for the government of the United States navy, and the regulations prescribed for the army and navy of the United States shall be in force.

83. As to offenses committed when such articles of war are so in force, courts-martial shall possess the jurisdiction and power of sentence and punishment exercisable by like courts under such articles of war or the regulations or laws governing the United States army and navy or the customs and usages thereof. Imprisonment other than in the guard house shall be executed in jails or prisons designated by the governor for the purpose.

84. Questions as to commissions, warrants, enlistment, discharge, etc., should be looked up at the time to make sure of correct action under the law.

85. So far as *you* are affected by recourse to courts in the administration of discipline, it is enough to know that faithful performance of duty and due respect to authority and observance of regulations will keep you from being subject thereto.

86. If detailed to perform any function therewith, you must read up the law covering your work, to be sure that you perform it correctly. Consult particularly the "Manual of Court-Martial Duty."

87. As a preliminary step to trial by court-martial officers and men are "placed in arrest," and in case of serious offenses men are placed in confinement, which means under guard at the guard house or tent. "Arrest" is a temporary status, while awaiting trial. It may not be imposed as a punishment, nor maintained longer than absolutely necessary to bring the man to trial.

88. Only commanding officers have power to place officers in arrest, except that in quelling "quarrels, frays, and disorders," any officer may place in arrest any other officer or man participating therein. An enlisted man may be placed in arrest by any superior having authority over him; who will at once report it to the man's company commander.

89. An officer in arrest may not exercise command nor wear his sword; he remains at his tent or quarters unless more extended limits are granted him, and communicates with his superiors only in writing. On the march both officers and noncommissioned officers in arrest march in rear of their organizations. An enlisted man in arrest performs his work, and even attends drills, but would not be allowed to go on guard, nor to absent himself from the company without special permission. Noncommissioned officers are not confined to the guardhouse while awaiting trial, except in aggravated cases or where escape is feared.

90. If called upon to deal with any matter of this nature consult Army Regulations, "arrest and confinement," for guidance. In the matter of making out "charges," and bringing the man to trial, consult the "Manual of Court-Martial Duty," as well as "Regulations."

91. It is recommended that organization commanders read to their men in addition to reading the articles of war, those paragraphs which name the offenses for which enlisted men are liable to trial under your own law.

FIELD SERVICE REGULATIONS UNITED STATES ARMY

While these Regulations are largely for higher commanders, yet each man who aspires to the leadership of even a squad, should have a copy for study and reference. They are as necessary for field service, as the drill manual is for drill. They contain much that must be learned now for field training; and will be your indispensable guide if you are called to perform any special work connected with field service.

The remaining chapters of this book are designed to discuss those Articles of Regulations in which it seems advisable to give additional matter of particular interest to company officers and men. Other Articles of Regulations are exclusively for higher commanders, and need not be discussed here.

Orders.—Article III is devoted to this subject, so important for those in command. But it includes one consideration of real importance to subordinates;—such familiarity with the *form* of an order that when you receive one, each of its divisions of information and instructions will fall naturally into its corresponding niche in your mind, and thus you will be instantly aware of it, if any one of the necessary points has been omitted. This is very important, and should secure you against ever starting off on your mission, incompletely instructed for its proper performance.

Combat.—Article V contains the condensed Art of War, and many of its meaty sentences would furnish food for a whole evening's discussion. There is but little here, however, of practical application to the members of the company. You will get your most valuable instruction for combat from faithful study of your own drill manuals.

For the cavalry, until their manual is available, I have pictured a dismounted combat in describing "The Fire Fight," Chapter VI.

Machine Guns.—This is not a fourth arm. These guns are supplementary to the fire action of both the infantry and cavalry, and as such are playing a vastly important part in modern combat. In our service, they are served by a detachment in each regiment, made up of details of so many men from each company, commanded by an officer of the regiment detailed for this purpose.

The present war has tremendously emphasized their value, and in consequence they are appearing in greater and greater numbers in each regiment. Experience will establish what this proportion should be for normal service.

The essential characteristics of machine gun fire, as compared with collective rifle fire, are: its volume, due to the mechanical action of the guns; its density, due to the compactness and small dimensions of the cone of dispersion; the facility with which fire can be opened, directed, and controlled; and its nerve racking rattle, which gives it a moral effect greater than that of collective rifle fire.

The gun is so light as to be easily handled, and is readily carried about the battlefield by hand. It represents a concentrated mass of rifle fire, which may be delivered from a contracted front on short notice. Its weaknesses are: its requirement of an excessive amount of ammunition, and its peculiar vulnerability to artillery fire—and it will always be the function of artillery to put them out of action wherever located. On account of the amount of ammunition exhausted, their action may never be continuous. They are the arm of emergency and opportunity—for use only in the *decisive* moments of an action.

These considerations will indicate to the thoughtful student how best to employ these guns in any given engagement. Any one may soon learn their mechanism, and the drill for their employment. The thing that will count will be the ability and judgment of the machine gun commander, in properly using his fire for the best interests of the general fight; and again, the proper appreciation on the part of the army commander of the true functions and capacities of these guns. Here is the field for study for all officers, and the need for much practice in maneuver and battle exercises.*

There is hardly a phase of combat in which their proper use may not play a most important part. Their fire action will be of telling value in conjunction with the mounted combat of independent cavalry. In both the defense, and attack, of positions, their proper use is likely to be the deciding factor. And remember that, while without making actual hits we may so effectively keep the enemy down in the trenches as to make possible our advance in the attack, it is conversely true, that the advance of the attack can only be stopped by actually making hits, and inflicting severe casualties. Hence the value of machine guns, which, by sudden, overwhelming fire, concentrated upon the assaulting lines, may paralyze the attack by the tremendous losses inflicted.

Any man detailed as a member of the machine gun detachment may feel that he is fitting himself to render even better service in the fight than he could as a member of his company. Let actual service come, and this detachment is likely to become the *corps d'élite* of the regiment, and justly so, for the splendid service these guns will render in the fight.

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* See "Combined Infantry and Cavalry Drill Regulations for Automatic Machine Rifle, Calibre .30." Supt. of Documents, Government Printing Office, Washington, D. C. Price, 10 cts.

CHAPTER XIX

PATROLLING

THIS chapter is based on Article I, Part II, Field Service Regulations, and quotations are taken therefrom.

1. **Military Information.**—This consists in that collected by the General Staff in time of peace, and that obtained by troops in the field after the outbreak of hostilities. The latter covers the physical features of the theatre of operations, and the position, strength, composition, and intentions of the enemy; and is absolutely essential to enable a commander properly to determine his movements.

2. This information is obtained from various sources —higher commanders, adjoining troops, inhabitants, newspapers, letters, telegraph files, prisoners, deserters, spies, maps and **reconnaissances**, collected under the supervision of the intelligence section of the general staff. An elaborate system is organized, including an efficient secret service; and in this system the work of the troops consists in reconnaissance.

3. "In hostile territory influential persons, especially those supposed to be active in the enemy's cause, may be seized and their persons and houses searched. Letters and newspapers in post offices, and files in telegraph offices, are carefully examined, and anything of importance sent to higher authority."

4. "Unless instructions have been given to spread false information, all persons connected with the military service are forbidden to discuss the military situation, plans, movements, etc., with, or in the presence of, civilians of any age, sex, or nationality."

5. **Reconnaissance.**—"Reconnaissance is the military term used to designate the work of troops or individuals when gathering information in the field. Reconnaissance begins as soon as the theatre of possible opera-

tions is entered and continues throughout the campaign. No matter what other sources of information of the enemy may be available, reconnaissance must be depended upon to obtain the information upon which all tactical movements of troops should be based."

6. "**By Aero Squadron.**—In forces of the strength of a division, or larger, the aero squadron will operate in advance of the independent cavalry in order to locate the enemy and to keep track of his movements. Contact with the enemy once gained will be maintained thereafter continuously."

7. "**By the Cavalry.**—Reconnaissance in the theatre of operations is best made by the cavalry, which from the beginning of the campaign seeks to determine the enemy's strength and dispositions. It protects its own army against surprise, screens its movements, and insures the safety and success of the troops of other arms. The defeat of the hostile cavalry and its expulsion from the field are usually the best means to this end. As the opposing armies draw near each other, the cavalry endeavors to secure control of the ground between and bends every effort to that close and continuous reconnaissance of the enemy's forces that is vital to the success of the entire campaign."

8. "**By Infantry.**—The extent of the infantry reconnaissance will not be so great where the aero squadron and the cavalry are able to perform this service efficiently, as it must be in the absence of efficient reconnaissance by the other arms. In no case, however, can infantry reconnaissance, preceding or during combat, be dispensed with. Infantry and artillery cannot rely wholly upon cavalry or aero reconnaissance, but must conduct such close-in reconnaissance as is necessary for security and to determine their immediate dispositions.

"In the absence of cavalry, reconnaissance at a distance is made by infantry or scouts specially detailed for that purpose.

"*If a command* is weak in cavalry, or the country is rough and broken, it is advisable to use reconnoitering detachments composed of both infantry and cavalry."

9. The uncertainty of a commander as to his enemy's exact location, strength, kind of troops, and intentions, has been aptly called the "Fog of War." It hangs like a screen between the two armies; each commander is using his cavalry with its small patrols far out to the front, in an effort to penetrate this screen and gain the desired information. How impossible for either to decide wisely what to do unless he has information as to what his enemy is about.

10. It is evident, therefore, that the work of reconnaissance is of vital importance, and that it may have to be performed by the members of all three arms of the service, infantry, cavalry, and artillery. It is the one field of endeavor in which the individual is put upon his own resources, and expected, unaided by the leadership of his seniors, to get results and bring them back.

11. In its larger aspects it is an important study for senior officers; for subalterns, noncommissioned officers and privates, it means accomplishment in the art of patrolling. And as every man is liable to detail as member of a patrol, so every man must by training fit himself to carry on alone, if need be, this important mission. For through casualties or dispersion, it may befall that the least efficient member of the patrol has been left alone, and he must be man enough to go on alone, and if humanly possible, get, and bring back, the desired information.

12. It is for you then to learn first the duties of patrolling, both as leaders and as members. Whole books are written on this alone, and you may well read them, as you can.* We shall try to give herein the fundamental principles you must know. Rules cannot be relied on to govern every case in the field. You must learn the principles, and then apply them to each given case according to your best judgment. And actual practice in handling men in the country is absolutely necessary! You should try to secure it. A few men can easily arrange for a Sunday morning together in this practice, and if some one has used a little ingenuity in devising a reasonable military situation, it can be made most interesting and instructive. This is natural work for squad leaders.

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* "Aids to Scouting," Baden-Powell. "Art of Reconnaissance," Henderson.

13. **Patrolling.**—It is impracticable to discuss all the different kinds of patrols. But by discussing the work of the reconnoitering patrol, no matter what its name, which is sent to a distance to gain information of the enemy, we will have covered the most difficult phases of patrolling, and the rest should be easy. While this includes consideration of the use of the horse—for cavalry, mounted infantry scouts, and field artillery—in case of dismounted patrolling, the horse may be dropped from consideration, without affecting in any way the principles involved.

14. While approaching the actual conflict, the main body of our army is usually covered by a cavalry screen; small mounted patrols fanned out from larger supporting bodies in their rear, the whole formation interposed in the form of a semi-circle between us and the enemy. Its purpose is to screen our main body from observation of the enemy, and to find and observe the location, strength and movements of the enemy. This latter is done by the use of advance patrols. Their duty is not to fight but to find the enemy, penetrate his screen, gain and keep in touch with him, ascertain all the military information possible, and most important of all, to transmit it back quickly and intelligently for the timely use of the commanding officer. In the absence of cavalry these duties must be performed by the other arms.

15. The size of these patrols is determined by the officer sending them out, and will depend upon the object to be accomplished, the number of messages expected to be sent in, and considerations of the enemy, distance, terrain, etc. A patrol may be any size from one man up.

16. **Preparation.**—It is desirable to choose for this purpose men of some military training who may know

what they are looking at, and judge with some intelligence what will be of value to report; also men able to take care of themselves, of good judgment, resourcefulness, woodcraft and coolness, preferably those who have had experience in roughing it in unknown country, such as in big game hunting. If allowed time, the leader should inspect minutely the men, equipment and horses, before starting out. The duty is hard and no man or horse physically unfit should be taken. Concealment and quiet being necessary, avoid taking a white or conspicuous horse, or one that neighs or paws the ground when separated from the others. (This latter becomes a frequent fault in service horses who associate constantly together. Occasion should be taken frequently in training to make the horse work alone, separated by considerable distance from the others. Drill in individual horsemanship could furnish opportunity for this.) Arms and accoutrements should be inspected, and nothing taken that glistens in the sunlight or rattles at the trot. Travel light. Leave all unnecessary articles in the wagons, if possible. If likely to be out long, take ready cooked food, preferably bacon sandwiches and a canteen of tea or coffee; also for your horse, a nose bag with a feed of oats. Where learning of the presence of your particular organization would be of value to the enemy, leave off all insignia that would betray it if you were captured.

17. The most common fault among beginners particularly, and the most costly one, is for the leader to start off without really knowing fully *what he is sent to do*. He will not have gone a mile before assailed with doubts and questions about this point and that, which now occur to him as he takes time to consider his mission. As it is a most important duty for the officer to give his instructions correctly, so it is important that the patrol leader acquire the habit of so receiving his instructions that he is sure in his own mind as to each of the essential details necessary for a clear conception of the object of the expedition—*"his mission"* as expressed in military parlance.

18. These instructions must inform the leader what is known of the enemy, what are the immediate intentions of the command from which he goes, what he is going for, the presence of other patrols near his, how far he should go, where return and where send his messages. You and each of your men should thoroughly understand and remember every part of these instructions. It would be well always to repeat them in the presence of your patrol to the officer giving them. This is the time to use your brain clearly, and be sure that you are certain of each of the points. Do not hesitate now to ask questions which unanswered will later make your action uncertain and possibly a failure. Above all be perfectly clear as to your mission. Knowing surely what it is intended you shall accomplish will be the determining factor in deciding correctly the many questions of action which will come up later. Remember the importance of every man having fully and clearly all the information you have, as anyone of them may be the only one left in a position to gain very important information and get it back, and had things not been explained to him, it would perhaps never occur to him to do this. Moreover, if all understand existing conditions, what their commander is about, what you know of the enemy, and above all what they are trying to do themselves, individual interest will be aroused and their intelligence and resourcefulness brought to bear for its accomplishment. Here is an opportunity for a reasonable amount of suggestions to be considered by the leader.

The patrol leader must provide himself with a watch, compass, whistle, message blanks and pencil, a field glass, reliable wire cutters, and a map, if possible. Every soldier should carry a strong pocketknife.

19. Formations.—There is no normal formation for a patrol, it changes constantly to meet the varying conditions. The leader regulates this, keeping constant control, generally by signals, of the work of the members of the patrol. His guiding principles are that the formation must *be such as to* favor the escape of at least one man if jumped, to protect the patrol from surprise, to expose none to view unnecessarily, to disperse for observation as little as possible, never to use two men to look where one can see as well. Two men working together within easy seeing and speaking distance of each other, say fifteen yards, will generally lead the patrol. Following a road, one would take either side, and that one would scout beyond a curve or over a crest to whom the accidents of the ground offered the better cover. The leader will be next to these men or *one of them.* In the vicinity of the enemy, or when any emergency threatens, he must be in the lead, one of the first to meet it, that his decision and orders for the conduct of the patrol may be immediate, and not delayed by having to wait while another member of the patrol explains the emergency to him. Where necessary to investigate a point of danger from which the patrol may be fired upon, or to pass a defile that cannot be first reconnoitred the leader will send one man ahead, to investigate, holding the others in the best formation to cover his retreat. Whether marching, or at a halt, he will always have men in observation so as to protect his own flanks and rear as well as his front. The possibility that he will have to fight demands that he hold his men well in hand, concentrated. The necessities of observation demand dispersion, and his formation will be always a compromise between these two requirements.

20. Signals.—Especially in this class of field work quiet is essential and all movements must be controlled by visual signals. In addition to those prescribed in the drill manuals, the following will be found very convenient.

For "Do you see anything?" wave the hand horizontally across the face; for "Yes" nod the head in affirmation; for "No" shake it in negation; these will be exaggerated to accommodate them to the distance signalled; for "Enemy in sight or hearing," hold the pistol or rifle horizontally over the head, steadily if a small or distant body, raising and lowering it if the enemy be in force or in dangerous proximity. "No enemy," hand raised with weapon held vertically. "Take cover," low downward motions with hand palm down. Firing announces the presence of the enemy to all within hearing.

Additional signals may be agreed upon between the leader and his men, but you are cautioned against attempting too many as they are likely to be forgotten or confused. Care must always be taken not to expose your position to the enemy in making these signals.

21. **The Conduct of the Patrol.**—Generally your function is to gather information, not to fight. The killing of a few individuals as such has no influence on the war. The advisability of leaving the rifles in camp has even been argued, lest you foolishly yield to the temptation to fight. Your safety should be gained through concealment, or flight, except in the rare cases where fighting is necessary, or required by your mission. If surprised, or in a situation where you must fight, act with extreme boldness. Try to get the jump on the other patrol. The patrol that is the quicker in this will probably win. It is, however, the most skilfully conducted patrol that can get the information desired, and return to camp without having been seen by the enemy.

22. You should move cautiously but not timidly, avoiding unnecessary exposure. But as a rule you cannot leave the roads and work across country constantly under cover for any considerable distance. Time is a most important factor, and remember your mounted patrol was chosen because of its mobility. Time and again patrols have gained most wonderful information of the enemy, which has been absolutely valueless because not gained in time, or at least not reported in time, to be of any value to the commander. You have got to take chances, got to make progress; if absolutely necessary to gain the information you will even knowingly expose yourself, and then bend every energy to getting away with the information and getting it back to the commander.

23. When you believe yourself nearing the enemy, or are *passing the* ground especially to be reconnoitered,

you will generally work well to one side, off the road; and the best method is to work from one elevated point of observation to another from which good views may be had. At each of these points you would dismount, and with your field glasses, from concealment, study the field minutely, selecting at this time your next point for observation. When satisfied that the field contained no enemy, select your route, and move by it quickly to the next point.

24. Since moving objects most readily catch the eye, do not assume there is no enemy in the field because you see none there. You must rather search minutely every available location for some indication of his presence. He is being as careful about concealment as you are. Remember how difficult it is to discern an immovable object, especially if it be such as to blend naturally into the background. This principle of absolute immobility for escaping observation has its application to your own conduct as well as to the necessity for your searching carefully for the enemy. Recall how wild animals will "freeze" in the presence of danger, and thus so often escape detection.

25. Even in advancing along a road the leader should scout carefully from cover to cover, that is, the more available man would peer around a bend in the road, or, removing his hat, would halt just this side of each crest to allow himself to look beyond it before advancing along the road. The system of advancing thus by "leaps and bounds," hastily from cover to cover, at each of which you scout carefully, can often be employed by the leaders where the nature of the ground admits. The remainder of the patrol can march more uniformly in their rear. In working across country it will often be best for the whole patrol to rush together from cover to cover.

26. You will of course avoid passing unnecessarily *over* crests, getting on the skyline, or where the background *will be* favorable for observation by the enemy.

Always feel that the enemy may be watching for you, although you cannot see him. If you must expose yourself for a short distance and conditions make it possible, cross at one time quickly in a body. Unless the enemy is watching this one particular spot, which is unlikely, you may thus cross quite unseen, or he may just think he saw something and wonder if he was mistaken; if you passed successively and attracted his attention, as he looked more closely in wondering if he had seen anything, he would make sure that he had by seeing the next man pass. Reverse this in passing a dangerous defile or other stretch of country that cannot be previously explored, and go through successively at a good-sized distance, and at a trot or gallop, to prevent the whole patrol being captured.

27. Remember that the danger of surprise is the hesitation caused thereby, so be constantly prepared to act quickly in case of the appearance of the enemy. This requires that you keep your mind constantly on the job. You cannot be indulging in day dreams of affairs at home. As you ride along you will naturally note the points at which the enemy might appear, and you will be continually sizing up the conditions surrounding you and deciding what would be your best line of action in case the enemy appeared at any of the points in this particular location. Thus, you will be prepared to act quickly, and nullify the enemy's advantage in planning to surprise you.

28. Much of the work will be individual scouting by yourself or one of your men. Actual scouting does not contemplate covering long distances, and so a scout is justified in sacrificing time to concealment. His object is to gain points of observation without being seen; from these he takes time to make the most thorough investigation before advancing further, and determines his next line of action only after most careful consideration of the existing conditions. The most important thing for the scout, and important for that matter to the members of a patrol, is the ability to avoid flinching, or in any way showing your consciousness of it, in case you suddenly become aware that you are under the observation of the enemy. You should not make the slightest sign to let him know that you realize he is there, but continue exactly as you were, thinking hard, and alert to take whatever advantage your surroundings may offer for your escape. Not knowing that you are aware of his presence he will generally let you come on, until suddenly you have dashed to some possible cover and gotten away. Your mission might require you to investigate closely some point, for example, a bridge or river crossing, and though you knew that you were thus practically sure to approach the enemy closely, the safest method for you would probably be to ride along nonchalantly as though never dreaming of his presence and with every appearance of riding directly into his hands, until, having accomplished your mission, you get within striking distance of some line of retreat, and then suddenly dash for it.

29. And in going into any situation which the presence of the enemy would make difficult, you should always consider the question of a line of retreat. It would be the instant of delay necessary for you to choose one in an emergency that might cause your destruction. In tying your horse to work dismounted, leave him so you can get him and get away quickly in case of trouble. Likewise a man left to hold the horses of a patrol that has dismounted should hold them ready for a quick get away.

30. If your patrol is marching across country where it may be under observation of the enemy, you should take occasion to change its apparent route when conditions make this possible without observation, thus making it more difficult for the enemy to jump you. For example, if an intervening ridge cover your advance for a little space, change your direction to the right or left and thus cross the ridge to one side of where the enemy naturally expected you. In the same way in entering a woods, when well within them change direction enough to come out at an unexpected point. Wherever practicable pass open spaces at a trot or faster gait.

31. Do not get lost. Excepting those who have a well developed sense of direction, "bump of locality," it will be necessary to look back often and familiarize yourselves with the appearance of the country to your rear so that you can recognize it on your return. This is important for every man in the patrol, particularly so when at any time any individual may be detailed to return as a messenger. You should particularly note landmarks at cross roads and forks. All this will be particularly difficult for men who have not had practice in working their way through country. Every soldier ought to give himself this practice when riding in the country for pleasure. The sense of direction is largely a matter of training, and results from experience and observation. You will be quite helpless without it. The man who hasn't it should never be without a compass, and should keep himself familiar with the compass bearing of the return rendezvous.

32. As you consider the situations you are constantly meeting try to look at them from the enemy's point of view. Do not allow yourself to think of the enemy as in one direction only;—when on distant patrol he may be on either side or even in rear of you.

33. Refresh your rations, and horses' feed, if you get a chance. Here is the time to give the best of care to your horses, to keep them and the equipment ready for instant hard work. It may require their maximum endurance and speed to save you in a dash out of danger. Do not let interest in your mission make you forget to water them from time to time, so that they will be ready at any given time to go reasonably long without further watering. Rest them when you can by dismounting, and never travel at speed, particularly up or down hills, unless necessary. This latter is a great fault in the proper use of horses at maneuvres. Men and officers may as well realize that horses cannot be rushed up hill and down at a run all day, every day, and not quickly break down.

34. *At cross roads* halt the patrol under cover and

send a man to each flank the necessary distance to get a proper view as to the presence of the enemy.

In all cases where men thus go to points of observation it must be the general rule for them to be expeditious and to return promptly.

35. In entering and passing through woods which you must reconnoitre, your natural formation would be a line of skirmishers with extended intervals. You may arrange to assemble at the far edge, and in any case you would scout carefully to the front before breaking out of the woods.

36. In passing any short defile, like a bridge or ford send one man over ahead of the patrol. Do not enter villages or other enclosures unnecessarily. If to be entered send two men in ahead, while the others remain under cover until the two signal "all right." And then remember to keep up observation to prevent surprise.

37. If you suspect the presence of the enemy under certain cover, one way to find out if he is there is to let a man approach to within a reasonable distance for discovering his presence and then, acting as though he had discovered him, turn and run. This will almost invariably draw his fire, although otherwise he would naturally have waited for your much closer approach before firing.

38. In investigating any enclosure or cover do not approach it along the natural front line, but have some one or two of your men turn it, that is, approach it from the flank or rear.

39. In an unfriendly country avoid the inhabitants as much as possible. In any event do not let one of them go ahead with information of your approach, if you can help it. In time of war enter villages to seize telegraph, railroad and post-offices and newspapers, seeking for communications which may give you valuable information.

40. In friendly country you may consult inhabitants, especially such as travel about the country, doctors, horse traders and so on. You can often get particularly valuable information about trails, by-roads and other

topographical features. It is quite an art in itself so to approach a rural mind as to gain the desired information promptly. You might practice this also when riding for pleasure. It is a poor time to be too smart or technical. You must not rely too much on the accuracy of their information, particularly about the strength of troops, which they will naturally exaggerate. They have even been known to go wrong on distances. You must expect contradictory reports, even from reliable, honest men. If you judge information thus received sufficiently reliable and important to be reported, always include in your report a statement from whom you received the information, and your judgment as to its reliability.

41. The less information you yourself give the better. Even giving false information for the purpose of deceiving the enemy is dangerous; it may result in deceiving your own forces. You will have to use good judgment in this matter.

42. Keep quiet; forbid unnecessary talking. Above all, the patrol leader should not allow himself to engage in conversation; he must keep all his attention on the business in hand. Everyone should be alert, observing everything along the route. The most trivial signs may prove of the greatest value. The action of cattle, horses, birds, and other animals, often indicate the presence and location of the enemy, and may equally well betray your own. The most carefully executed maneuvre has been defeated by the friendly curiosity of a few cows in a pasture. Tracks of horses, men, or guns; their probable freshness, and direction; abandoned camp sites, articles of clothing, or equipment, envelopes, or discarded papers, dust clouds, etc., may put you on the scent and inform you of the actions and even morale of the enemy.

43. As you advance through a section where you are liable to meet the enemy, from time to time you must select suitable points at some distance on the flank, and accurately point them out to all your men, explaining in *each case that this* will be the rallying point in case the patrol is dispersed. All men must understand that they are to reach this rallying point by circuitous routes.

44. When using roads, march on the sides of the road to avoid making dust, to avoid the sound of the horses' hoofs on the hard road surface, and to make yourselves less conspicuous by keeping near fences, brush, etc.

45. **Getting Contact.**—What are you going to do when you see the first small group of the enemy? If it be moving you must determine first whether it be a patrol, or one of the covering groups of a column in march. If a patrol, the next question is your action. If you are a screening patrol, to prevent observation by the enemy, you will take proper steps to secure the capture or annihilation of this patrol, or at the very least to disperse it. If you are a reconnoitering patrol seeking information, your effort must be to avoid being discovered by this patrol, and your only question is, shall I report having seen it or not? If your instructions included information of the enemy to the effect that patrols were known to be in this section, you will not report it; if they indicate the possibility of the enemy being here, and that you were to find out if he is here, then you will always report the first sight you have of the enemy. You see now the necessity for your clear understanding of your initial instructions. If you discover this group to be not a patrol, but a covering group of a large command, seek perfect concealment until it passes, or halts. The object is to see the larger command, gain information of its exact strength, direction, and rate of march, and get this information back to your commander as quickly and surely as possible.

46. If you are a reconnoitering patrol you may feel secure in letting the enemy's patrol pass, for you know that you are supported by larger bodies in your rear who have their own protecting screens to guard against observation by this patrol. If the enemy's patrols are not known to be operating hereabouts your message will have given them timely warning of its approach. Then if the

patrol is to be captured or fought, it will be their function to see to it.

47. You are out to seek information of the main body of the enemy, and must give your attention to that. This generally means infantry and artillery. Large bodies in movement must use the roads, therefore give particular attention to the roads. If seeking forces likely to be in camp or bivouac, you will naturally first strike their outposts, and you should seek these on those elevated points that naturally give the enemy the best lookout and line of defense. If you discover them, without stumbling on them, it will be by patient searching with your glasses, and your first indication of their presence will probably be some slight movement on their part, or a flash of sunlight from objects of their equipment.

48. Even though your object be to locate the main body, you should report the presence of any large command. Unless your instructions clearly indicated otherwise, you should report a troop or company or anything larger.

49. For obtaining information of a command on the march, you would take a position in concealment on one flank, far enough away to escape detection by his flankers, and affording you a fair line of retreat. Avoid choosing a prominent point which he is likely to search. While in concealment keep your horses grouped together to avoid their being restive, under perfect cover if possible, at least out of the sunlight. The polished leather seat of the saddle will flash a sunbeam like a metal surface, and yours should be covered if exposed to the sun. You are looking for just such flashes when searching with your glasses for the enemy in concealment. Even the tires of the wheels of a masked battery may flash you intelligence of its location. While here in concealment, as at all other halts, your patrol should be stationed as march outposts in observation covering every possible line of approach to prevent surprise. Do not forget this important thing.

50. Your observation is to determine the strength,

kind of troops, and movement of the enemy. Every man must know the following rule for determining strength: Marching in column of fours, fresh troops closed up will pass a given point at the rate of about 175 infantry, or 110 cavalry, or 5 guns or caissons in one minute. This is at a walk; double it for the trot.

51. Having gained the information, you are ready to send back a message. This is taken by two men going together for mutual protection, in hostile territory. In friendly country a single messenger may be sent. Very important messages should often be sent in duplicate, the messengers going by different routes. And now do not lose touch with the enemy. Reconnoitering patrols are like a swarm of flies, driven away perhaps, but always returning. Hang on to the enemy's flanks or outposts, keep him in constant observation. You are not only annoying him, but will make him anxious for the success of a contemplated movement, since he feels that your commander must be aware of it. And remember how important that your commander be made instantly aware of the enemy's movements. Do not hesitate to send back your last man with important information, and to remain alone in further observation.

52. If your patrol is jumped, further effort at concealment is useless. You may, however, gain a few precious minutes by avoiding the use of firearms, in case the enemy is equally accommodating. If his be a small patrol, by quickness try to get the jump on him. He is just as much afraid as you are. If too many to attack, disperse and reassemble at the last designated rallying point. If this is impossible, let each man try to continue individual reconnaissance alone.

53. If your instructions were to seek the presence of the enemy, *negative information* is often equally important. Keep this in mind and send back word that you have investigated so and so and found no evidence of the enemy. This is too often overlooked and commanding officers are left in grave doubt, ignorant as to whether

their patrols have been captured or gone astray; and as to whether or not the enemy is approaching in force when his presence is anticipated. Remember that you are your troop commander's eye and ear, and do not leave him back there blind and deaf in a critical time. If you are keeping him in mind, as well as your mission, your best judgment will tell you what messages to send, and when to send them. If he has failed in his instructions to tell you of his situation and his ideas as to the enemy, it is his own fault if you do not keep him satisfactorily informed.

54. It is often your duty to *exceed instructions*. For example, if you were ordered to patrol to a certain village, looking for the presence of the enemy, and in that village were told that a hostile command was in camp a mile or so out the other side, you would be culpable in returning without investigating this report, and trying to gain accurate information of the enemy. In this case you would send a message reporting what you had been told at the village, and what you proposed to do in going further. Again, when sent to a certain point or for a certain distance for observation, if after arriving, you see the necessity for going further in order to gain the necessary view, your duty requires you to go ahead. A soldier on reconnaissance is not obeying orders at drill, he is a responsible member of the team, and must faithfully carry out the plan of his team captain, gladly taking responsibility when necessary, always using his best judgment. And even if he goes wrong, his leader will never condemn him, if he may believe his action was taken conscientiously and loyally.

55. Even when concealed and undisturbed in a good point of observation, the getting of *military information* is no simple matter. It requires thought and training to know just what your commanding officer should be told. It is not enough to tell him that a squadron of cavalry, one troop in advance guard formation, is passing A. J. Smith's house at 9:30. Even if A. J. Smith's house were

located, even if you gave the direction in which passing, even if you had included the gait, your message would still be incomplete. When troops are approaching contact, minutes are precious, and your message should have been exact in stating that the *point* of the advance guard, *tail* of the column, or some other well-known element in the column, passed the house at such and such a minute. Your commander could then figure the time of its arrival at a given point. If troops were stationary, he would be interested in the location of their various elements, particularly their outpost and its flanks, the reserve, the wagon train, artillery, lines of communication, defensive works, etc. You could also give him general, if not technical information as to the terrain, lines of approach, etc.

56. Even if your mission does not require such report, so long as you can do it without interfering with your mission, the more you see and locate of the military features of the country you are passing through, the more valuable your report may become; and you are certainly training yourself to be a more valuable military leader. More than one youngster has been brought into prominence, and later been given military preferment, because he had so intelligently sized up the country that in an emergency he was the one man whose knowledge of a round-about route or position of advantage, gave his commanding officer an unexpected advantage in maneuvering or in actual battle. You may well train for this by acquiring the habit now as you ride through the country of hearing and seeing everything about you. As one general has expressed it, "practice until you can foretell what is on the other side of a hill before you."

57. A patrol should never destroy bridges, roads or any means of communication, unless specifically instructed to do so. To do so is as likely to embarrass the plans of his own commander as those of the enemy.

58. **Messages.**—In writing your messages do not *locate your patrol* too exactly, it is generally a waste of time, and the message may be intercepted and thus lead to

your capture. In writing dates use this form—16 May, 1914. Fill in the hour the last thing you do, giving the exact minute. The blank for number is to be used in numbering your messages on this tour of duty consecutively, so that the commanding officer, in receiving them, may know if he has failed to receive any previous messages from you. In addressing the message avoid anything which could give aid and comfort to the enemy if captured; even naming your commander's rank would give a good indication of the size of the command at least. "C. O. advance guard," "C. O. at Brushtown," are definite enough and give the least possible information. Wagner gives the following: "The indispensable qualities of a written report are scrupulous accuracy as to facts, simplicity, clearness of diction, legibility of handwriting and correct spelling of proper names. Surmises should never be given as facts, and the person making the report should carefully separate what he himself knows from what he has been told him by others. Brevity is desirable, but not at the price of obscurity. A report should not be expressed ambiguously in ten words when it can be stated clearly in twenty."

59. The most intelligent men need practice in giving military information by written messages, and the troop commander should take occasion at noncommissioned officers' schools frequently to state the conditions of an assumed situation requiring a message to be sent, and practice all his noncommissioned officers in writing a correct message to cover the case.

Appendix, Field Service Regulations, shows the form of the United States Army field message blank and its envelope. These blanks are furnished in pads for the use of officers' and noncommissioned officers' schools, and they should be secured and used until all are familiar with their proper use.

60. Verbal messages will not do. It has been found impracticable to send them correctly even by intelligent messengers. If absolutely impossible to write a message, the man should go who best knows of his own personal knowledge the matter to be reported. Verbal messages have often failed where it was attempted to convey but one simple, direct statement.

61. If time admits write your message with extreme care. Be sure it conveys the information your commanding officer will want so far as you know it, looked at from his point of view. Proper names must be PRINTED.

62. It is well for your messenger to know the contents of the message as he may have to destroy it to prevent its capture, and later may find himself able to deliver the information. If you have read and explained the message to him, he may be able more intelligently to answer questions which the commanding officer will want to ask after reading the message. Of course, your messenger must know how to get back to the command; it may be that you will have to give him a rough route sketch. Tell him at what rate he is to travel whether "ordinary" (walk and trot), "rapid" (trot), or "urgent" (full speed), and whether or not he is to rejoin you, and where. In writing a message, if time admits, it is well to give a brief resumé of important facts previously reported. Indicate roads by naming two points thereon. If you give a bearing of a point, specify whether it is compass or true bearing.

63. Where the capture of your messenger is likely, you might give him a false message, carried where found easily, while the true message is carefully concealed in the folds of his saddle blanket, or other safe place. The messenger should understand that his message may be shown to other commanders of our troops, met by him *en route* to his own, if the information contained is such as to be of value to them.

64. Instruct all men that if *captured* they should not talk. Attempting to give false information is dangerous, changed plans may have made it true. If a messenger, try to protect your message from capture, destroying it if necessary.

65. At maneuvers play the game fairly, and conduct

yourself as nearly as possible as you would in actual service. It is most difficult to make conditions real, particularly in the matter of patrols gaining information. Men are so daring when facing blank ammunition only, and umpires cannot be on the ground to rule in each individual case. Gaining information by procedures which would be absurd in the face of bullets, is not particularly creditable, nor does its practice give you any beneficial training. If captured, conduct yourself as you would in war. Do not warn your companions by shouting, when you must realize that in war time such conduct would cost you your life. If paroled observe your parole honorably.

66. Having completed your mission, there are two reasons why it is better not to return over the same route, —to avoid ambuscade, and to widen your field of reconnaissance, familiarizing yourself with just so much more ground.

67. In general a good patrol leader is an exceptional man. He should combine the qualities of good health, vigorous physique, good eyesight, presence of mind and courage, with military training, experience, and above all, with good judgment and loyalty. He must be able to read maps and to send clear, concise messages. He should have such military education as will enable him to view the given situation as to its military meaning from the standpoint of his commanding officer, and to report accordingly. He should also be able to make a route sketch of the country he has to cover; while ability to make even a rough position sketch would add to the value of a report of the enemy in position.

CHAPTER XX

SECURITY

1. THIS chapter is designed to make more clear to subordinates the subjects treated in Article II, Field Service Regulations. Being discussed therein largely for higher commanders, it seems advisable to bring out more clearly the points of particular interest to the members of a company. It is not intended however, that this shall replace entirely a study of the Regulations themselves, particularly for the officers, who will find there much additional matter worthy their attention. It is hoped rather to give such a picture of this phase of military work, that each member of the company may find himself taking an intelligent interest in whatever part he is detailed to take in this class of work.

2. Frederick the Great says, " It is pardonable to be defeated, but never to be surprised." And this surprise is avoided by taking proper measures for *security*. This should always be done in campaigning whenever the barest possibility exists of an enemy being in your vicinity. Had past commanders always observed this how differently would read our military history.

3. Security for the command in the field is obtained by *covering detachments;* on the march these detachments are *the advance guard, flank guard, rear guard,* or *march outposts,* using one or all as necessity requires. When in camp, the covering detachment is called an *outpost*. Your individual duties in connection with these are purely those of reconnaissance. They differ from your work in patrolling only in that your action must be more aggressive. While it is still your duty to discover the enemy and learn his strength, your commanding officer is in your more immediate vicinity and will need this information almost instantly. You have got to break in boldly and find out what you are up against at once in order not to allow

inferior parties to delay him or occasion unnecessary concern; and if the enemy be in force so that conflict is imminent, every additional moment you can give him for observation and preparation is of the utmost value. Greater boldness, therefore, will here characterize your work, which, if the enemy be met, will be sure to include sharp, determined fighting.

4. While your individual work is that of reconnaissance, still it is important that you have a clear mental picture of the formations and workings of these various covering detachments, in order that you may conduct your part intelligently. We will take them in turn, considering them in connection with small commands, where the same principles apply and are more easily understood.

5. **The advance guard,** as its name implies, covers the head and flanks of a column advancing in the direction the enemy is supposed to be. Its size and dispositions are determined by the supreme commander depending upon his mission, the terrain, the dispositions of the enemy, and whether likely to be attacked by artillery or not. It is always formed in separate detachments along the line of march, these detachments increasing in size from front to rear, each a support for the one next ahead, and separated by such distances that each in turn will have time for deployment before it becomes involved, after the preceding one gets contact with the enemy. These detachments are named respectively the *advance party,* which invariably sends a patrol well to the front called the *point;* next the *support,* and lastly the *reserve.* The reserve is separated from the main body by sufficient distance to allow the latter to deploy, and yet near enough to admit its timely arrival in support. The reserve is not used with the advance guards of small commands like a squadron or regiment. A single troop generally uses a point only, though its mission might possibly require an advance party.

6. Protection on the flank is afforded by the work of reconnoitering patrols. These patrols are sent out from the *advance party,* which should be commanded by a com-

missioned officer whose duty it is to discover the possible presence of any enemy within effective rifle range on either flank of the column. In rare cases the conditions of the terrain are such that this may be done by the patrol going out to the flank and marching along practically parallel to the column. As a rule this is impracticable, and very often unnecessary. Wherever the country can be viewed to sufficient distance from the column, no patrol will be sent out. Where the country affords cover that might conceal the enemy, a patrol must be sent out to investigate this cover. The commander of the advance party constantly consults his map and looks ahead for such conditions. Upon recognizing the presence of a point needing investigation, he would call a patrol leader to his side, point ahead to the locality to be reconnoitered, tell him what man or men to take with him, where to go, how long to remain, and how to rejoin. This patrol would leave as directed by the lieutenant, go ahead to the designated objective, execute its mission, and rejoin, probably at the rear of the advance guard, which in the meantime would undoubtedly have passed this point, the route of the patrol thus forming a loop.

7. By continually sending out these reconnoitering patrols to the flanks the lieutenant exhausts the strength of the advance party, his patrols returning either to the reserve or support. As the support commander notices the depletion of the advance party, he reinforces it with a squad or two as necessary. Thus fresh men and horses are fed in to do the patrolling, and this arduous work more equally distributed among the men of the company.

8. The point should be thought of only as the *leading patrol.* Better that it were named that only, as so many leaders seem to have an idea that it is to be formed compactly as a point with one man out in front and thus marched. In reality it should be conducted exactly as an independent patrol working over this given route, *but more aggressively;* concealment is sacrificed to speed and *thoroughness.*

9. The position of the commanding officer of the advance guard is designated at the head of his reserve, if he have one. Even so, he will generally be found nearer the support. And the support commander will generally be found near the advance party. An aggressive leader, and none other will succeed in advance guard work, wants to be up where he can learn at first hand any information of the enemy, ready to take bold, decisive action without delay. He can control his command in rear by visual signals, and avoid becoming involved with his men, keeping out by himself where he can see and hear and size up the situation as he directs the action.

10. Regulations provide for maintaining communication between the subdivisions of the advance guard by a chain of individuals known as *connecting files.* While conditions might arise to render their presence valuable, in the general case the fewer they be in number the greater advantage to efficiency. Especially in a small advance guard composed of a single company, it is only reasonable that the various detachment leaders should have such mutual understanding and training in team work that they can play the game harmoniously without the rigidity of these connecting files, and without depleting reconnoitering and fighting forces by dispersing so much of their strength ineffectually along the road. The development of visual signalling in training will be of great help towards this desired end.

11. The primary duty of an advance guard is to insure the safe and uninterrupted advance of the main body.

Specifically its duties are:

(a) To take the right road and make it passable.

(b) To guard against surprise and furnish information by reconnoitering to the front and flanks.

(c) To push back small parties of the enemy and prevent their observing, firing upon, or delaying the main body.

(d) When the enemy is encountered on the defensive, *to seize a good* position and locate his lines, care being taken not to bring on a general engagement unless the advance guard is empowered to do so.

(e) To hold the enemy advancing in force while our supreme commander has time to make proper reconnaissance and his desired dispositions.

12. The distance at which the advance guard precedes the main body, or at which the main body follows the advance guard, is stated in the "march order." In small bodies the advance guard generally regulates its march on the main body, and the advance guard commander must make such provision as to ensure keeping this distance within reasonable limits.

13. Troops on the service of security pay no compliments. Individuals salute only when they address or are addressed by a superior officer. Mounted messengers do not salute or change their gait upon meeting an officer or passing him, unless addressed. Civilians are not permitted to precede the advance guard. Deserters, suspicious characters, and bearers of flags of truce, the latter blindfolded, are taken to the immediate commander.

14. In conducting the reconnaissance, the patrols are, as a rule, small—from two to six men. While patrol leaders in general cannot be detailed by roster, only specially qualified men being worthy of this trust, these reconnoitering patrols sent from covering detachments can generally be led by any man of reasonable intelligence and training. Even here, in case of an important flank patrol that is to go out some distance, perhaps to be separated from the column by an impassable obstacle for a short distance, and likely to meet conditions requiring initiative, responsibility and good judgment, care must be taken in the selection of the patrol leader and in determining the size of his patrol. Your best patrol leader should be in command of the point.

15. **Normal Formations.**—The natural tendency, almost irresistible with too many officers, is to attempt to *take what they* have come to believe to be the normal *formation for the* advance guard. This is a natural out-

come of the study of many of our books, particularly the old Cavalry Drill Regulations. The only value of these normal formations is their helpfulness in making one understand the tactical principles involved in the use of covering detachments. To attempt to apply them in every case often results in absurdity. It is rather for the guard commander to study his mission, the conditions that surround it, the forces at his disposal and then to apply common sense and the underlying principles to his best solution of the case in hand.

16. **Getting Contact.**—If the point come under fire, the advance party commander, if not already there, should hasten up to take charge of the situation, holding his party at such point under cover as will enable him to use it to the best advantage. He must take quick action to see what is opposing him. Remember that the firing will be heard down the column and your commanding officer anxiously awaiting information. You must get it for him, and then get it to him with the utmost speed. Yours is dangerous work and will require great courage and daring. Good soldiers are eager for duty with the point.

Too often the first message that comes back from the point is, " The enemy is in sight," or, " We have struck the enemy." How absurd! The firing has probably given that information already. The only additional information derived from such a message is confirmation of the patrol leader's stupidity. Do not join this class. Burst in and find out how much of an enemy he is. Then you can report facts of value—his strength, dispositions, etc.

17. A flank patrol discovering the presence of the enemy would indicate it at once by visual signals to the nearest commanding officer in the column, who, especially if the patrol be attacked, must be prompt to take control of the situation, conducting it as the commanding officer of the advance party in like case.

18. You are cautioned against taking such action as to involve the command in an engagement, unless the *mission is such* as unquestionably to demand it. Even

then it should be for the supreme commander to choose the exact ground and time for engaging, if you can possibly hold the situation in hand, so as to give him opportunity to do it.

19. Open country often offers an opportunity to save men and horses by keeping the flank patrols out, advancing generally parallel to the column instead of looping back as required in close country. In any case a flank patrol having been sent out to reconnoiter a given point, seeing a need for further reconnaissance just ahead, and able to communicate with his chief by signal, should point ahead and look for a signal to continue, or return, as the lieutenant decided best.

20. All this reconnaissance work offers an effective field for the use of visual signalling, and in peace practice occasion should be made for communicating with your patrols and controlling them by these signals.

21. **Flank Guards.**—Your individual work in these does not differ materially from the above. While the flanks of a column are protected to a degree by the advance guard, in a special case, it may be necessary to provide additional security for a flank threatened by the enemy. This is done by sending a detachment called a flank guard to cover it. It may be a patrol only, or a large organization. It keeps in constant touch with the column by signals or by mounted messengers. It may march generally parallel to, and abreast of, the element from which detailed, or it may occupy a favorable position and hold it until the whole column has passed. In the latter case it would join the rear guard for the remainder of the march, rejoining its command upon reaching camp.

22. **Rear Guards.**—Even when advancing supposedly toward the enemy, the possibility of being attacked in rear generally exists, and is guarded against by a covering detachment, known as the rear guard. This will be relatively weak during an advance. It is formed and marched in the reverse order to an advance guard, the *point* coming last.

23. In a retreat, especially before a pursuing force, its functions become vital, and it is relatively stronger than an advance guard. Its principal function being to protect the column from molestation, if the enemy is aggressive, its chief work will be fighting. The method of procedure is to occupy successively positions which the enemy must capture in order to continue the pursuit, holding them as long as necessary to give the main column freedom of movement, and not retiring from them sooner except as a last resort. This may call for desperate fighting, and quick arduous work in moving from one position to the next. In general the method is to hold each position until your ability to get away is endangered, and then to withdraw by sections under the covering fire of the others. Meantime reconnaissance has chosen the next position, and the first troops withdrawn are the first to occupy it and to open fire. Where the enemy is not too aggressive, sufficient delay may be gained by simply forcing him to deploy into the attack formation, and then withdrawing into the next position, where you will repeat these tactics. This may result in such carelessness on his part that you will be given an opportunity to strike a telling blow. When so ordered, the rear guard may further delay the enemy by placing obstacles in his path, destroying bridges, etc. As the enemy's pursuit will likely be on a broad front with a view to reaching the flanks of our retreating column, rear guard work will require *wide reconnaissance* by the flank patrols.

24. **March Outposts.**—No body of troops however small should ever rest or halt in any situation no matter for how short a time without having men in observation of every possible line of approach, whence the enemy might surprise them. This provision is so simple of execution, and its nonobservance has so often led to disaster! It applies to a patrol, to an army, and to every intermediate command. If you stop to water, to feed, or just to rest, it is equally important. They are the combat patrols of battle, and the outposts of bivouac.

25. The duty is one of reconnaissance. It is a position of grave responsibility, and all should be taught to regard it seriously.

26. If the supreme commander has evidently overlooked it, subordinate commanders should act independently in sending out these sentinels. They must be pushed out far enough to give timely warning of any possible approach by the enemy.

27. Outposts.—Duties of an outpost may be summed up in *reconnaissance, observation,* and *resistance.* Its specific duties are, 1st: To give such protection as will allow the remainder of the command a chance for undisturbed rest. 2d: To prevent the enemy's reconnaissance of our main body, or even of our outpost line and dispositions if possible. 3d: In case of attack, to give timely warning of the approach of the enemy, and in any event to hold him in check long enough to enable the main body to make the desired dispositions for the fight.

28. Former conceptions of this duty were satisfied by a static guard, which was simply on the alert to meet the enemy when he appeared. This idea is changing; more and more the work of the outpost is performed by patrolling, the number of sentinels being greatly reduced thereby.

29. Like other covering detachments, the outpost has its *reserve,* line of *supports,* and line of advance parties, in this case called *outguards.* It differs in that these detachments are in position rather than marching. Covering each flank as well as the front toward the enemy, it takes a form as though three or four advance guards had radiated from a central reserve and halted, with their supports generally occupying positions on or near a convex line offering the best position for a defensive action, while the outguards (the advance parties) occupy the best points for observation in the direction of the enemy, generally considerably advanced. Thus the general form of an outpost in position is fan shaped toward the enemy.

30. The outpost problem is always a bugbear to the student. This is because there are generally several good solutions, the correctness of any one being dependent upon the condition that it meet the line of attack which the enemy may choose to make. There is the difficulty, where will the enemy appear, when will he appear, and with what strength and intentions? By taking a static condition in camp the supreme commander has temporarily sacrificed the value of initiative, except in that he has selected the ground on which he hopes to fight defensively if attacked. To secure this is the outpost commander's problem, which he tries to solve in making his dispositions, and to anticipate by patrolling therefrom.

31. While you will not have to choose an outpost position, nor determine its entire dispositions, you may have to march your group out as one of the supports, select its proper position in your assigned sector, properly locate and instruct your outguards, and make the proper arrangements for mutual communication and support. This will require a detailed knowledge of outpost duties, and yours will be far more intelligently performed if you have a clear conception of the whole subject. So while there is given herein what you must know, you may well take time to read over the whole subject more in detail as given in Field Service Regulations.

32. **General Considerations.**—The vigilance of outpost troops must be unceasing. They should avoid trying to bring on a combat. They must avoid alarming the command unnecessarily. Their *raison d'etre* is to give their fellows in camp opportunity for undisturbed rest. Rifle firing should be indulged only as a last resort. It not only disturbs rest but betrays your position, probably the sole object of the enemy at the time. No trumpet signals except *to arms* or *to horse,* are sounded, and all unnecessary noises are avoided. Countersigns are used in the field in exceptional cases only. If it is desired that you annoy or deceive the enemy, the superior commander will give the necessary orders.

33. Where cavalry is working with other arms the *troop or squadron* assigned to outpost duty would form

what is known as advance cavalry. Its work would be that of reconnoitering patrols well out to the front during the daytime. At night you will be withdrawn behind the lines, into bivouac with the reserve, where your horses may be properly fed and rested. A few individuals might be kept on duty as mounted messengers; it might even be wise to use certain patrols for communication. The use of mounted patrols for reconnaissance in the night time is considered poor policy. It not only quickly knocks up the horses, but they are of less value than dismounted men, since the noise of the horses must always give timely warning to the enemy. Where a mounted patrol is sent to some distant point to reconnoiter in the night time, it should approach reasonably near, dismount, and, leaving the horses with a horseholder in concealment, proceed on foot. For all these duties you need apply only the general principles of patrolling.

34. When the cavalry is operating alone and must form its own outpost, then you become part of the outpost proper, and have to apply the principles of outpost duty. When an independent cavalry command forms its own outpost for its own protection, authorities are agreed that it should be formed generally dismounted, as an infantry outpost, the horses resting in camp; or, in large commands, with the outpost reserve. This is particularly true for the night time. Without proper rest for the horses at night, cavalry will soon be dismounted through their breakdown; and while being dismounted lessens their outpost distances materially, and lets the enemy get that much nearer them unobserved, night attacks are exceptional, and they can well afford the additional risk for the sake of having their horses in good condition for the next day's work. Where the cavalry, as in screening, forms an extended outpost for the main body, distances must be increased, and the horses kept even with the outguards. The questions of feeding, watering, and getting the most rest possible then become *prime* considerations for all officers in charge.

35. Selection **of Outpost Position.**—The position of the camp is generally fixed by considerations of water supply, etc. It then remains to select the best available ground and dispositions to protect this camp. These having been decided upon, and the troops detailed for the outpost, they are marched out by the outpost commander to the approximate position for the reserve. He divides his whole front into sectors, defined by natural objects in the terrain, assigning each sector to a group called a *support,* which he details to guard it. The sectors are so chosen that the natural position for the support will be a reasonably strong defensive position, and located on or near one of the likely avenues of approach by the enemy. Each sector is described as from such and such an object inclusive or exclusive to such and such an object inclusive or exclusive.

36. This sector becomes the field of operations for the support commander. Your instructions probably include a direction that you locate your support in the vicinity of a designated point. You march your command to this point with small covering detachments of your own guarding your front and flanks. These covering detachments will halt in self-chosen points of observation, as a march outpost for the support, while you are selecting its exact position, and determining the positions and composition of your outguards. During this time be sure that friendly patrols are well out in your front—even if you have to send them.

37. This is your next question, how best to employ the strength at your disposal in covering the sector assigned you. You will study this problem and solve it according to your best judgment, keeping in mind the interdependence between you and the supports to your right and left. The outpost commander himself will soon be along to inspect your dispositions, and perhaps to change them.

38. The consideration to govern your exact location of the support will be a good defensive position near the station of the support, to be occupied in case of attack. This should have a good view and field of fire to the front, with concealment and shelter from the enemy's fire. In the general case you will have to remove some obstructions to get this field of fire, and intrench more or less to get proper shelter. There should be good communications to the rear and good lateral communications between you and the neighboring supports. You may have to open up these communications to some extent.

39. The points of observation, where the outguards will be located, are your next consideration, and are chosen to give the greatest extent of view practicable; it may be that the country is so open that one man in observation can see all possible avenues of approach. More likely you will find so much cover in your front that you will want to station sentinels every few yards in order to cover it. This of course is impracticable, and you must pick the most likely lines of approach for stationary posts, and arrange to cover the less likely areas with patrols. Each sentinel post you arrange for will require three men and a corporal if a single sentinel, if a double sentinel post eight men. Your smallest patrol would be two men; this calls for six men detailed for each patrol. You must have at least one sentinel on guard at the support watching for signals from the outguards; three more men. You will find that you have quickly exhausted the strength of your command, and will despair of guarding your sector with so few men. Be sure you use what you have to the best advantage.

40. For the purpose of observation only, especially in the daytime, a single sentinel at the outguard is enough. This is arranged for by detailing a cossack post, a noncommissioned officer and one relief of three men. At this post the sentinel is stationed, if possible in concealment, but always where he can get the best field of view; and the corporal and two men take a position in concealment within easy communicating distance, not more than thirty or forty feet from him.

Where danger is great, and especially in the nighttime, and where it is desired to be able to offer some resistance, a stronger outguard is stationed with two sentinels working in unison both on duty together. This is known as a double sentinel post. It calls for eight men—the non-commissioned officer in charge, the six men for sentinels and one man for a messenger. These two sentinels are stationed within easy speaking distance of each other, fifteen or twenty feet, and are expected to communicate and assist each other in the performance of their duty.

41. A sentinel should never be mounted. The horse would betray his presence by his movements, and a sentinel should secure concealment by immobility. He may climb a tree or other object to gain greater altitude if desired.

42. Your dispositions must be made in ample time for everyone to familiarize himself with the various lines of communication, and particularly for all the men detailed for patrolling to go over their routes and familiarize themselves with their details before dark. It is also important that every preparation for defense be completed in daylight. This may include placing some obstruction like a barbed wire entanglement at such point on the avenue of approach as will hold the enemy there under your fire in case of attack. In this case each individual should arrange in daylight for laying his rifle so it will fire into this point. Then he may hope to do it successfully in the dark Machine guns aimed and clamped are particularly valuable for this use.

43. Your instructions have included directions as to what is to be done in case of attack, where the main line of resistance will be held, whether the supports are to be reinforced and hold their line until the main body may come up, or whether they will hold only so long, and then withdraw to another position. Knowing the general scheme, you can instruct your outguards as to the amount of resistance they are to offer, and along what lines they are to withdraw, and can intelligently plan for the conduct of your own support.

44. As you develop your situation you will probably find yourself filled with uncertainty and frequent

temptations to change your dispositions. Realize that you cannot possibly cover every point and contingency, so come to a definite solution as soon as possible, and then stick to it, unless you later find you are seriously in error. So many details must be seen to before dark, and you must not impress the men with your own uncertainty. As soon as your plan is definite, the first thing is to see that every man in your command is made familiar with the whole situation, and particularly with his individual duties in connection therewith. You must inspect in detail all dispositions and elements of your command.

45. The men at the support may stack arms and remove their equipment, excepting the cartridge belts. The question of fires and cooking at the supports will be determined by the outpost commander. He determines how the men are rationed and how the horses are watered and fed.

46. **Outguards.**—These are the cossack and double sentinel posts, commanded by noncommissioned officers, who march them out and select their exact positions, as the support commander did his, subject to correction by the latter at his first inspection. Their duty is to maintain uninterrupted observation of the ground in front and on the flank; to report promptly any hostile movement or other information of the enemy; to prevent unauthorized persons crossing the line of observation; to drive off smaller parties of the enemy attempting to penetrate the line, and generally to make temporary resistance to larger bodies.

47. Concealment is next important to observation. The line of observation is not necessarily continuous, but each outguard must know the location of the outguard on its right and left, and sends patrols for this information when necessary.

48. Patrolling to the front is done from the support or, if to any considerable distance, from the reserve. However, an outguard would send a patrol at once to assure itself that cover in its immediate front was not occupied

by an enemy, rather than sit down with the possibility of an enemy being there in observation all the time.

49. All movements of patrols, or others, to and from the position of an outguard, should be made from the rear, or in any event under cover from observation by the enemy.

50. Outguards for each support are numbered from right to left, as the supports themselves are numbered. Each outguard is then known as number so and so of such and such support.

51. Members of an outguard may not remove their equipment, and keep their weapons in position for immediate use. Fires are not permitted, nor anything that would betray their location.

52. Sentinels.—This is grave duty for the individual soldier and he must be impressed with its importance. He must exercise ceaseless vigilance and, especially at night, coolness and good judgment. His tour of duty is generally two hours on post and four hours off.

His post must be carefully selected to give him cover from observation, and the best facilities for seeing and hearing. He will generally be stationary, as an aid to concealment, and his sense of duty must be depended upon to keep him awake. His weapon is habitually loaded and locked ready for instant use.

53. The instructions given a sentinel on the line of observation embrace the following, and these should be a matter of common knowledge to all officers, noncommissioned officers and soldiers:

(a) Where the enemy is or is supposed to be, and the direction from which he may be expected to come; the names of villages, streams, and prominent features in sight and where the roads lead.

(b) The number (if any) of his post, and the number of his and of the adjoining outguards; the position of the support; the line of retreat to be followed if the outguard is compelled to fall back; the positions of any advance *detachments*, and whether friendly patrols are *operating in front*.

(c) He watches to the front and flanks without intermission, and devotes especial attention to unusual or suspicious occurrences; if he sees indications of the enemy, he at once notifies his outguard commander; in case of imminent danger, or when an attack is made, he gives the alarm by firing rapidly.

(d) By day, officers, noncommissioned officers and detachments recognized as part of the outpost, and officers known to have authority to do so, are allowed to pass in or out; all others are detained and the outguard commander notified.

(e) At night when persons approach his post, the sentinel comes to a ready, halts them, and notifies the outguard commander; the latter challenges, ascertains their identity, and acts accordingly.

(f) Individuals who fail to halt, or otherwise disobey a sentinel, are fired upon after a second warning, or sooner if they attempt to attack or escape.

(g) Deserters are required to lay down their arms, and a patrol is sent out to bring them in. Deserters pursued by the enemy are ordered to drop their arms and the alarm is given; if they fail to obey they are fired upon.

(h) Bearers of flags of truce and their escorts are halted and required to face outward; they are then blindfolded and disposed of in accordance with instructions from the support commander; if they fail to obey they are fired upon. No conversation with them is permitted.

54. These instructions for the sentinel on outpost have been consolidated into the following form, more convenient for memorizing. It is more important to know these orders than the "General Orders" of interior guards.

"FIRST: *About myself and friendly neighbors.*

"My post is number . . . . . ., outguard number . . . . . . The outguard is *there.* The post on my right is number . . . . . . outguard number . . . . . ., and is *there.* The post on my left is number . . . . . ., outguard number . . . . . ., and is *there.* The support is *there.* Other detachments are *there* and *there*. *Such* and *such* patrols are operating in my front. *This* road leads to . . . . . .

"SECOND: *About the enemy.*

"The enemy is reported to be *there*. I have seen him (describing exactly what hostile bodies I have seen) *there;* or, I have not seen him. I am to watch for him between *there* and *there*. If I see any unusual movement I am to report it at once to my outguard commander who is *there*. If suddenly attacked and forced to retire or threatened with capture, I shall rejoin my outguard by going around *that way* so as not to disclose the position of my outguard to the enemy or to mask its fire.

"THIRD: *How to conduct myself on my post.*

"By day I shall make the best use possible of such natural or artificial cover as is available, standing, crouching or lying down, and remaining stationary or moving about as will enable me to observe the sector assigned me to watch in the most efficient manner. I shall carry my piece at will, loaded and locked. I shall inform passing friendly patrols of what I have seen.

"At night I shall remain standing, habitually stationary, moving about only for the purposes of observation. I shall not sit or lie down unless authorized to do so.

"FOURTH: *When to fire on the enemy.*

"Unless specially ordered to fire on the enemy whenever seen I shall fire only under the following circumstances: (a) When suddenly attacked and there is no time to call the outguard commander, I shall fire rapidly, but with careful aim. (b) When a person approaching my post is ordered to halt and fails to do so, or otherwise disobeys me, I shall fire deliberately, taking careful aim, so as to be sure to stop him.

"FIFTH: *Treatment of individuals approaching my post.*

"By day I shall allow only officers, noncommissioned officers, and detachments recognized as part of the outpost, and officers known to have authority to do so, to pass my post either *in or out*. I shall detain all others and notify *my outguard* commander.

"At night when any persons approach my post, I shall come to a ready, halt them, and notify the outguard commander. Persons claiming to be deserters from the enemy are required to lay down their arms. If they are pursued by the enemy, I shall order them to drop their arms and I shall give the alarm. If they fail to obey me at once I shall fire on them. I shall halt bearers of flags of truce and their escorts, require them to face outwards, and at once notify the commander of the outguard."

55. Detached Posts.—These are practically the same as supports, but are sent to distant points outside of the line of supports and outpost proper, which the superior commander has deemed it necessary to cover. Their location is made known to all members of the outpost. If detailed to this duty you would proceed much as the support commander, and arriving at your destination would use your best judgment in disposing your strength to best cover the ground assigned you.

CHAPTER XXI

MARCHES AND CONVOYS

ARTICLE IV, Field Service Regulations, contains the consolidated essence of the principle and rules for the conduct of marches and convoys. This is a vital subject for the welfare of the command, and should engage the serious attention of every man who may exercise in any degree whatever the function of leadership. The following observations, in amplification of the Regulations, have been found helpful particularly to inexperienced troops, but may not be considered as taking the place of the text.

1. Not only in war, but in field training for war, you will find marches of almost daily occurrence, while battles will be but few. It is true too that until the most modern wars the casualties of marches have often been greater than those of battles; and this will always characterize the work of unseasoned troops. A man may gladly give his life on the battlefield, and yet justly complain at being made sick unto death by the indifferent or ignorant conduct of the marches incident to the campaign. How important then that everyone study the art of conducting a march properly and acquiring the mental habit of invariably considering the welfare of the men and horses in the column.

In campaign the march is often made to accomplish some task at its completion. How important that you shall have trained yourself and your men so you may conduct it properly, and arrive ready for strenuous fighting if the opportunity offers.

This whole Article IV is full of valuable points for commanding officers, and no one should undertake to conduct a march without re-reading it carefully to be sure he has in mind all its excellent precepts. An inexperienced *officer on a march* may well keep his copy of Field Service *Regulations in* his pocket, and refer to this chapter during the halts, to be sure he is not slighting something. I have actually seen this done, and to good advantage.

2. Note that in a successful march, "troops arrive at their destination at the *proper moment*," which means that the march is begun at such time that it may be properly made and the command arrive at its destination just on time. This requires that the commanding officer use enough gray matter to figure out just how long it should take the command to make the march, and then have enough confidence in his ability to conduct it, so he will dare start at the right time. So often commanding officers commence their march long before the necessary time, so as to be sure to get there, thus subjecting their men to unnecessary hardship and annoyance, as well as losing the opportunity of adding the interest to the march which would come from everyone realizing that they had so many miles to make in just so much time. What a satisfaction to everyone concerned to see a commanding officer start at a given time, conduct the march smartly, and end by swinging into place at exactly the right time. That shows a little headwork.

3. Note also that "they must arrive in the *best possible condition*," and this means not alone physically but that they will be in the best possible *spirits*. Probably in no other form of field service can there be so much opportunity for a good troop leader to use his ingenuity for the purpose of keeping up his men's spirits. He will take advantage of every condition he meets on the march to show that he is conducting it with constant thought for the comfort of his men; in his manner of passing obstacles, avoiding dust, halting so that they will get the shade and the breeze, regulating the gait so as to keep them inspirited, etc., etc. On a hot, dusty march cavalry should ford the stream rather than cross a bridge, especially if it involves the possibility of swimming the horses a short distance; the excitement and change of this will keep the men in spirits for a considerable distance. Where opportunity offers, a command may often halt and let everybody go in

swimming. It is impossible to dictate here just what the commanding officer may do, but remember that on the march you are to be thinking continually of how you may conduct it to the best interests of your men.

4. "Marches are conducted so as to reduce to a minimum the hardships of the troops." This is a fundamental principle of field service, and must be the controlling guide for the leader in the conduct of all classes of work.

5. "Careful preparation" will include also prescribing exactly what clothing for the men, equipment for men and horses, and camp equipage for the organization, shall be carried, and then seeing to it that these directions are exactly carried out.

6. "Strict discipline" will require that each organization commander constantly consider the last man in the column in the conduct of his march. It has been found very helpful to detail an intelligent sergeant to set the pace every day at the head of the column. This ensures uniformity of gait and enables the captain to drop back alongside the column, or at its rear, whenever he wishes, and in this way keep track of the condition and conduct of all his men and horses.

7. "March sanitation" requires careful attention to halting where the environment is conducive to the object of the halt; to the matter of drinking water for the men as well as the horses; to the care of the men's feet, and the horses' backs and feet; to keep mounted men physically awake so that they will ride properly.

8. "The march is habitually at route order," but this allows no less attention on the part of the commanding officer and his assistants. The commanding officer who rides along telling stories or listening to them with apparently no thought for the men behind him, will fail utterly in the conduct of his march, and the men properly hate him. While the men themselves relax the rigidity of "attention," they must nevertheless continue attentive to the requirements of marching, and mounted men must

ride their horses with attention to individual horsemanship. Their failure to do this will result in constant changes of pace in the rear of the column, jamming up, falling back, and double timing or trotting up, causing greater fatigue for both horses and men at the end of the march.

9. Marching with packed saddles, the troops should be mounted by the command or signal, **mount,** never by the command **Prepare to mount, MOUNT,** as in drills of precision. It is difficult, particularly for short men, to mount over the pack, and to hold them for a simultaneous mount, many of them necessarily balancing with one foot in the stirrup, results in pulling the saddle over to the left and displacing the pack, often to the injury of the horse's back.

10. The march should be conducted normally by visual signals. A short blast of the whistle calls attention of all to the commander, and he then signals the desired command. Men should quickly learn to " pass the word " down the column. This is absolutely necessary for control in night work.

11. Where other than the regulation hourly halts are made, the commanding officer determines in each case whether or not time is sufficient to justify removing packs and dismounting. If practicable he should always do this, and inform the men of the minimum length of the halt, so they may take full advantage of it.

12. On account of the burden of the packs, the less time consumed on the march, within reason, the better for both men and horses; and wherever wagon transportation is available, the weight of the pack should be reduced by transferring part of the load to the wagon. Where even a little space is available, a careful commander will lighten the load for men and horses that are below par, thus keeping up his average of efficiency.

13. Rules of the Road.—Troops must keep the *right of the road,* the rear of the column particularly, so *that when anyone* wishes to pass he will be sure to pass on your left hand. They must follow accurately in trace in passing vehicles, and not "hog the road" by cutting in ahead of them. The principle of dividing longitudinally to admit so marching as to avoid dust, muddy or hard, stony road beds is of great value and leaves the road bed quite free for ordinary traffic. In this everyone should follow in the exact trace of the leader of his own column, and this leader should take great interest in conducting his column over the best route available. By looking back down the column from time to time you will often discover some indifferent brute who is lazily allowing his horse to plough along through the dust to the great discomfort of all the men in the rear of him, even when the head of the column is being carefully conducted to avoid the dust. Such men must be dealt with summarily—it is generally possible to arrange for them to march for a few days where they will get all the dust there is. Nothing is more annoying than to see an officer or noncommissioned officer at the head of the column so indifferent to his opportunities as a leader as to go heedlessly along ploughing up a cloud of dust.

14. **Preparation.**—Canteens should be filled the evening before and hung where night air will cool contents. Especially important that the organization commander should superintend the preparation for the march, and his lieutenants may well be engaged in this themselves. Except with seasoned, well-trained troops, many things arise in which the presence of an officer is helpful. This requires that the officers turn out promptly at reveille and immediately thereafter complete their toilet, making up their rolls and leaving their tents and property ready for the squad in charge of packing up the officers' tents. Indifference to this has often delayed the loading of the wagon, to the great annoyance of the men. The officers' having their breakfast from the troop mess is an advantageous factor in this connection.

In normal conditions the old idea of getting up before daylight to get an early start is a thing of the past. This is the very best hour for resting; then a later start, and a more smartly conducted march, will get you into camp at the same time and in far better condition.

15. While the different units of the column are separated at the start by prescribed distances, these distances are expected to be increased and diminished according to circumstances during the progress of the march, but with a continual tendeny to the gradual resumption of normal distances.

16. **Rate of March.**—The great consideration is that it be kept uniform, and be so paced as to allow a free swing forward. This is an important phase of infantry training, in which efficient organizations take pride in being most skillful. For cavalry the rule is that the trot must not be faster than the slowest horse can accomplish by swinging freely in the trot, nor so slow as to prevent all the horses swinging freely. A free trot facilitates posting, thus easing the work for both man and horse. It is the gait that will get the command into camp with the least fatigue, and every opportunity should be taken to use it. You should not trot down grade, especially with a pack saddle, nor on hard road surfaces. Trotting up grade is not injurious, and is a test of the strength and wind only. Too frequent changes of gait are, of course, disadvantageous. Continuous riding at a walk puts both men and horses to sleep and results in sore backs. Where road conditions require travelling at a walk, it is a great advantage to dismount the men frequently for a ten minutes' walk at as fast a gait as they can lead the horses. This will bring new muscles into play, and will result in enough fatigue to make the saddles feel good upon remounting. Dismounting to walk down hills of any length should always be practiced.

The men should know that an increased gait will never be taken without command,—which should keep them from "trotting up" in the rear.

It is advantageous to have a few minutes quiet trot before the first prescribed fifteen minutes' halt, this will better prepare men and equipment for accomplishing the objects of the halt.

17. The rule for the conduct of the men at the hourly halts should be first, attention to equipment, then the horses' feet and harness, then the man himself, and not till then will he take time to roll his cigarette. In practice this is generally reversed, and when the time comes to resume the march a few men are found just beginning to readjust equipment. During all halts the thoughtful trooper gives his horse an opportunity to nip the grass, and get a little refreshment from the fatigue of the march.

18. It is a safe rule that troops prefer to finish a days' march as soon as possible, and long intermediate halts are rarely advantageous. Noonday halting to avoid marching in the heat generally proves a failure, unless the halt can be made in particularly pleasant surroundings; even then it is going to come hard to start out again in the afternoon and will interfere with the accustomed routine. Troops should reach camp in time to complete all work before dark.

19. **Passing Obstacles.**—This whole paragraph is important, and the particular point to be observed is so to regulate the march of the head of the column as to prevent the men in rear having to close up at an increased gait after passing the obstacle individually. Anything in the road which causes the leader to slow down for a few steps, will cause all the others in turn to do the same. This has got to result in opening out the column so that the individuals have to increase the gait, unless the leader holds down to the same speed at which he passed the obstacle until the last man has passed, or else advance the length of his command in column, and there halt until the last man has closed. Nothing is more important in marching than care in this matter, nor more often neglected. It may be simply a pitch in the road, a muddy or a rough place that will cause this slowing up in passing.

20. In using water transportation, a fundamental rule to be observed is that, particularly in cases that may

be dangerous, the strictest discipline must be maintained on board the boat; and in this case above all others, the rule should be enforced that the men remain in place, and do not move nor attempt to disembark, until ordered to do so.

21. The functions of the officer in the rear of the column are not only to prevent straggling, but to attempt to see that the men in rear march to the best advantage. If he finds continual closing up to be necessary, he should discover the individual whose fault it is, and shift him to the rear of the column; if he finds it to be the fault of the gait set at the head of the column, he should inform the captain accordingly. He will see that the men in his vicinity take proper care of their equipment at the halts. It ought never to be necessary for men to fall out to fix equipment between the halts. If necessary for any mounted man to fall out for a purpose requiring him to dismount, the lieutenant will always detail a second man to go with him to hold his horse. He will see that these men rejoining the column never travel at a gait faster than a trot.

He should be authorized to grant permission for men to fall out, to obviate the necessity of their going ahead to speak to the captain. In case a man falls out sick, and no surgeon be in immediate reach, this man will be given a slip of paper on which will be stated his name, organization, and the fact that he falls out sick with authority, and the man will be instructed to show this paper to the first surgeon who comes along.

22. In our service the water supply is rarely examined by experts, and company officers will generally have to use their own judgment as to its availability for drinking purposes. Where intestinal troubles do not exist, and the men have taken the typhoid prophylactic, this may safely be left to company officers. It is rarely practicable to supply boiled water on the march.

23. *It is true that* drinking water on the march is *largely a matter of* habit. Most men can acquire the habit of not drinking between meals, and this is certainly a great advantage to a soldier on the march. Only when perspiring freely will nature really require additional water during the hours of the march. In dry countries it is possible that his canteen will furnish his only water supply upon his arrival in camp. In any case *drinking or eating to excess* is what causes trouble. With trained troops the necessity for refilling canteens on the march will only arise when in such dry country that the question of having water in the next camp requires it.

24. It is no doubt true that on the march the horse needs watering more frequently than the man, and when it can be done a horse should be watered at frequent intervals. The quiet orderliness with which troopers water their horses is one of the best indications of the efficiency of the command. Effort should always be made so to regulate the watering of horses as to give them an opportunity to drink quietly of clear, unsullied water. This will require careful attention on the part of individual troopers, as well as the supervision of an officer or good noncommissioned officer. Where curb bits are used they should be removed while the horse is drinking. It is a custom of many troops in the Regular Service to use only the bridoon bit while on the march; the horse being much better able to carry the weight of the curb bit in the saddle bag than out at the end of the long lever arm of his neck.

In peace time field service the horses should be fed as nearly as possible the same as in garrison. In war time the trooper grasps every opportunity to let him eat something. He may even bring into bivouac a bundle of long forage under his arm for the benefit of his horse.

25. In avoiding the hardship of heat on the march, select halting places with shade, and free circulation of air, and place green leaves in the hat, the crown of the hat being pushed out. It is also helpful to unbutton the collar button of the shirt, and this is allowable. In fact it was probably for this purpose that the wearing of black ties was dispensed with. The rolling up of the shirt sleeves, while soothing, has never been allowed. Night marches to avoid the heat are of little value, and are particularly trying on the horses, who have to spend the long hours of the day fighting flies.

26. To practice marching for the purpose of hardening men and animals is scarcely applicable to citizen training. It is, however, of great value to practice marching for the purpose of instructing both officers and men in the duties incident thereto, in order that they may be fitting instructors for the recruits when necessity comes. They should, therefore, be made as nearly as possible under service conditions.

27. The arrival of the wagon train in camp at the end of the march is of vital importance to the welfare of the command. Every man in the organization should be interested in the successful conduct of the wagon train, and take particular interest in performing thoroughly any duties to which he may be assigned that will in any way effect the welfare of the train. Probably the most frequent cause of delay is the presence in the train of wagons improperly packed, whose loads are shifting and falling off on the road.

The same men who have indifferently loaded the wagon in the morning are probably the first to grumble at its nonarrival in camp. It is really important that every man in the organization know how to load a wagon properly with the field equipment and even more important that some one man who is particularly skillful in this should be in charge each day of the loading.

28. It should be the interest not only of the quartermaster and his men in charge of the train, but of the section detachments from the escort accompanying the train, to assist in every way in bringing the train safely and promptly into camp. Very much will depend on the common sense shown by the drivers in their care and handling of their teams.

29. In case a forced march is ever imminent, look up the excellent rules in Regulations for its conduct.

30. Every organization should have at least one experience in making a night march through country with which they are unfamiliar. They will then learn the peculiar difficulties of conducting them properly, and the necessity for observing great attention to many details, particularly to keeping good order, keeping the men awake and the horses from stumbling, and to keeping the right road, especially where you are trying to follow a preceding command. If opportunity offers, to maneuver in a heavy fog, will furnish much the same conditions. Before undertaking it, read the Regulations on the subject. Practice "passing the word," from head to rear, and from rear to head, as preliminary training.

31. **Convoys, Escort Duty.**—The convoys with which you will generally have to do will be the supply train, usually wagons under charge of a quartermaster. The natural escort for these trains is Infantry, whose rate of march most nearly accords with theirs. Distant patrolling, however, is necessary to security in the presence of the enemy, and cavalry will be attached for this purpose. The advance cavalry should work from three to five miles ahead, scouting well to the flanks. The secret of successful convoy duty is effective patrolling to such a distance as will discover the presence of the enemy, long before he is within striking distance. Besides assuring security, this force investigates the road as to its availability, the security of bridges for the train, the acceptability and safety of defiles, and wherever question might arise or trouble ensue, leaves a guard until the support comes up.

32. The advance guard proper marches about a mile ahead of the train, its commander constantly examining the country with a view to selecting suitable places for parking the convoy should the enemy be encountered. He would never permit the head of the train to enter a defile or other difficult situation until his guard was in possession of the far end of it.

33. The senior line officer on duty with the troops detailed for escort, commands the convoy. Thus a lieutenant and his platoon escorting a colonel paymaster and his money chests. The commanding officer, however, consults so far as practicable the wishes of the officer in charge of the convoy as to the hour of starting, length of marches, times and places of halting, etc.

34. It is the duty of the escort to bring the convoy safely to its destination on time; the commanding officer should not consider himself interested only in protecting it from the assaults of the enemy. Not only will the squad of the escort assigned to each wagon section be instructed to assist in every way, but the whole escort should take an interest in helping out in any emergency that might delay the train. Not only may they have to assist in repairing roads and bridges, but actually in working with the teams and wagons.

35. The flanks of the convoy are its most vulnerable point of attack by the enemy. Efficient scouting must make it impossible for the enemy to bring the wagons under effective rifle fire without previous warning. A convoy should never be surprised.

36. The escort is not expected to do much offensive fighting; it would not pursue a repulsed enemy. If the enemy holds a commanding position on the line of march he must either be dislodged by the escort, or perhaps better, be kept occupied while the convoy proceeds on another road.

37. This service requires the greatest promptness in determining the strength of the enemy found in opposition, and particularly in getting the report of his strength and position back to the commanding officer.

CHAPTER XXII

CAMPS AND BIVOUACS

1. As in marches so in camp, the fundamental consideration is to reduce to a minimum the hardships for the men and horses, and also to add everything practicable for the comfort, and to keep up the interest of, the men. Men will not take care of themselves without the direction of some one in authority; they will wade through mud to get water from a spring where five minutes' work would place stepping stones or rails to keep their feet dry. The leader must see to such things, considering each new camp an interesting problem for him to solve to the very best interests of his men. Often brush shelters can be quickly erected for protection from winds or storms. It is easy to cut brush and make artificial shade where natural shade does not exist. It should be arranged artificially in hot weather for at least one assembly place where the men may eat and sit about after meals. A few minutes' work will often clean out a spring, and add 100 per cent. to its value. A quickly built dam will often make a comfortable pool from a shallow stream. The men soon learn that these things are for their own comfort, and while they will not do them undirected, they are easily interested in doing them under enthusiastic leadership. It is impossible even to suggest all that may be done—it is up to the ingenuity of the leader and it is no time for him to rest in the shade and let the men shift for themselves.

2. The kind and amount of tentage is determined by the conditions of service. It is often an advantage in warm dry weather not to put up any tentage for one night stands. Where headquarters contains many officers, as often at maneuvers, it would be a great saving to the troops and to transportation to use one large tent for the accommodation of the entire staff.

3. *While in* the presence of the enemy tactical considerations must practically determine the site for the camp; in peace time, and wherever possible, greatest care should be given to the selection of the site. Not only sanitary considerations, but those for the comfort and entertainment and interest of the men should govern. Privacy should be secured whenever possible. Nothing adds more to the interest and welfare of men in camp than to be near water available for swimming, and generally facilities for swimming may be found with a little exertion within striking distance of camp. Effort should be made to do this, and in case a swimming hole is found, everyone in the command should be notified where it is. This should always be the care of the leader. And the hours for stated calls should be published promptly so the men may know what time is available for any purposes that take them out of camp, swimming, etc.

4. The manual of each arm prescribes the method for its organizations to go into shelter tent camp. For the cavalry, while awaiting theirs, the following is recommended. Halt the troop on the ground where the picket line will be, rather than where the men's tents will be, thus preventing soiling the ground that is to be slept on. The men are dismounted, bridles, arms and cantle rolls are removed and placed in lines one yard in front of the horses, the odd number horses are then turned back into the rank and tied in pairs to the even numbers, head to cantle. Each man immediately returns and stands behind his equipment. This leaves all of the men free to pitch camp together, the horses being immobile. Meantime the chiefs of platoons have gone to the right flank and stationed themselves to mark the right of the two lines of tents. When the captain sees all the men ready, standing by their equipment, he commands "Form to pitch camp," the men pick up their equipment, and form in the same order in columns of files on the chiefs of platoon faced toward them, covering off from head to rear and taking each six feet from the man in front of him, the odd numbers on the chief of the first platoon and the even numbers on the second. One and three tent together, two and four together, Nos. 1 mark with the heel at command of their chief given as soon as the column has covered off, Nos. 2 at command of theirs. The captain commands, "Pitch camp." He may pitch with the tents faced toward the street, usually done. This system is equally good for pitching camp in one line, the whole troop forming one column on the chief of first platoon, 1 and 2 pitching together, 3 and 4 together, Nos. 1 and 3 marking at command. This system allows the man to carry all his equipment with him as he falls in to mark the location of his tent, thus time is saved and equipment not misplaced, as has often happened. Each man in turn takes his place from the head and may move to avoid a boulder or other obstruction without deranging the rest of the column, since it has not yet formed. After the camp is pitched the picket line may be placed quietly and the horses tied on it. One of the marked advantages of this method is that the saddles may be left on without danger of having them broken by the horses rolling while the men are pitching camp. A disadvantage is that it is not safe to loosen cinchas while the horses are tied in pairs. It may be done in a few minutes, however, when the horses go on the line, and circulation under the saddle will have been somewhat relieved by removing the weight of the trooper from the saddle.

5. There is just one sure way to *pitch a shelter tent* expeditiously, and it should be learned in preliminary practical instruction. The halves buttoned together, one man will give his whole attention to holding the front tent pole vertically in place, while the other first pins down the front corners of the tent, aligning them into the line of the front tent poles, and then takes the front guy rope and pins that in position taut. They have now completed the "front triangle." Both now go to the rear of the tent, one holds the rear pole vertical, while the other pins down the two corners and guy rope making the "rear triangle." *The tent is now* up with the sides flat and smooth; one man

may occupy himself with buttoning together and pegging into place the rear point of the tent, while the other pins down the interior points of the sides of the tent; or if stones for driving tent pins are scarce, one may drive all the pins, while the other proceeds to arrange the equipment. As tent poles are being constantly lost and broken in field service, and are a nuisance in the pack, many troops find it more satisfactory to leave them in garrison, and use in their place the saber in its scabbard.

6. In making a shelter tent camp, no tent should be pitched on ground unsuitable for sleeping on, in order that alignment and interval may be preserved. The men themselves must know that they are expected to move a little to the right or left or even backward or forward out of line, rather than pitch their tent in a little gully that would carry a stream of water through it in case of rain, or over an out-cropping rock on which they would have to lie all night.

7. Particularly in cold, stormy weather some troops consider it advantageous for four men to pitch together, buttoning the square ends of their tents together, thus presenting a tent of double length with both ends pointed, and closed, if desired.

8. A most advantageous form for the picket line is three sides of a hollow square; this can be easily done with a ground line. It enables the sentinel, standing in the centre to see all of the horses all of the time, and to reach any horse in trouble almost instantly.

9. If the organization be part of a larger command, as it approaches the immediate camp site some man should precede, reporting to the officer who is to designate the exact location of each organization, and under his direction take post where the right of the company is to rest. The captain can then bring his company into position without delay or confusion.

10. The quiet orderliness and the promptness with which a command goes into camp is a real test of the excellence of its interior administration and efficiency.

This is one of the best examples of the proper use of the squad system for doing the necessary work about camp, and a well-organized company will go into camp without noise or confusion and in the shortest possible time. Where this system has been inaugurated each squad leader knows exactly what his men should do, and the order in which they are to do it, and the whole command works with machinelike precision.

11. The question of ditching tents and picket lines is always determined by the captain, and not left to the individual initiative of the men; in the same way he determines when tents shall be rolled or furled, and bedding and clothing aired.

12. The first things to be considered upon arriving in camp are the rules for sanitation, and proper use of the water supply. Every officer and noncommissioned officer must consider himself on duty in seeing that the camp grounds are not soiled, and that proper police regulations are observed, not only in this connection, but in connection with the water supply.

13. "Lack of sufficient rest not only renders troops unfit for hard work but diminishes their power of resisting disease." National Guard officers have been known to tell their men that they must expect hardships in the field, and apparently to welcome all manner of unnecessary hardships, nor make any effort to alleviate them; this is unreasonable. To undergo avoidable hardships does not enable one to stand the unavoidable ones any better. As a matter of self-training in troop leadership, officers should make every effort to prevent unnecessary hardships and to alleviate the necessary ones. Work should be so arranged and systematized that the men may be given full opportunity to rest during the day, and always allowed opportunity for a full night's sleep. Particularly with young men, and those unaccustomed to hard physical work out of doors, long hours of undisturbed sleep are necessary to keep them in the best of condition.

14. *The curse of a camp is an officer who is con-*

stantly calling for details of men for fatigue duty at all times of the day, and, even worse, calling for two or three times as many men as he needs. Work must be systematized so that it may be done and out of the way and the men allowed to rest, and above all the officer requiring a detail should use judgment and ask for no more men than are necessary for its proper accomplishment, the men working reasonably. It is characteristic of the army to see eight men puttering about a piece of work that should be done by two or three.

15. In field service, where the day's work requires an equal amount of exertion for all members of the command, it is unreasonable to require such guard duty as will handicap certain ones by requiring several hours' loss of sleep, as results from garrison guards. This duty should be performed by "running guards," in which each man loses but one hour's sleep.

16. In mounted commands, it is a general principle that every one is on duty all the time in case of trouble on the picket line, members of the stable crew particularly. This makes a special guard unnecessary during the hours of daylight. In case of stampede the men hasten to the horses and go quietly among them and restore tranquility. If the herd get away, one or more troopers on fast horses get into the lead and gradually lead the herd back to camp. In presence of the enemy a detail from each platoon is always designated to go immediately to the horses in case of attack, to take such action as the captain directs.

17. In field service the cavalryman is distinguished by the personal, often affectionate, care he gives his horse. Thorough grooming, hand rubbing of the legs and back under the saddle, careful watering and feeding are grateful attentions that the horse well repays in added service. He has gloried in his horse on the march as he rode smilingly by the enpacked infantryman plodding in the dust. When he reaches camp he must gladly reciprocate by thoughtful attention to the welfare of his horse, while the infantryman rests.

18. In camp the organization commander should drop around at unexpected times to see how things are going, particularly at the kitchen. Stated inspections of camp are of less value in maintaining cleanliness.

19. The best rule for policing a camp is to *keep the camp policed.* In permanent camps some receptacle, most easily a grain sack, should be tied to the tent ropes outside the door of each tent for the reception of waste matter; the police detail will empty these each morning.

20. A little ingenuity on the part of the squad leaders will enable them to arrange some kind of rack where the personal arms and equipment of the men may be kept off the ground and out of the way in each tent. In the same way from three green sticks a saddle rack may be made outside of the tent in about five minutes, where the horse equipment may be kept covered by the slickers.

21. Your men should always be in the fittest condition possible. Unnecessary exposure or anything to lower the vitality should be avoided, as these put them in a receptive condition for breakdown and disease. Excessive use of intoxicating liquors is one of the most common causes along this line. How many men have ruined their careers as a result of sickness or disease contracted while under the influence of liquor, or as a result of reduced vitality from its use. Men should not be required to sleep on the bare ground unnecessarily and provision should be made, if possible, for extra hay or straw for their bedding.

22. It is important to keep the intestines warm when sleeping, hence the value of olive drab shirts; woolen socks are also a great comfort on cold nights. If the night's sleep has been broken the commanding officer should try to plan that all may have a chance to sleep after lunch next day, remembering that young men particularly need a full amount of sleep.

23. It is recommended that each organization have among its reference books, for the use of the men, and *for the use of the* organization commander whenever in the field, a copy of "Field Service," by Captain James A. Moss. It contains not only a great many practical guides and suggestions for field service, and care of the men in the field, but many suggestions and camp expedients, which will be found most interesting to squad leaders, and even to the individual men themselves.

24. In camp a great convenience results from keeping some large receptacle of water hot at the kitchen incinerator fire, for the free use of the men, without disturbing the cooks at the kitchen. Make the rule that any man may take what hot water he needs at any time, provided he replenishes the boiler with the same quantity of cold water.

25. It is the duty of first the squad leaders, and then the first sergeant and quartermaster sergeant, to see that the men are always properly equipped. No equipment should be taken in the field that is likely to give out during the proposed tour. This is particularly applicable to important straps that are likely to break under strain, especially curb straps and stirrup leathers. Where they show such wear that they are likely to give way under strain, the strain should be applied at once, and the two resulting pieces taken to the quartermaster sergeant and exchanged for a new strap. This will save accidents in the field and add to efficiency in strenuous times.

26. "Retreat" is for the purpose of furnishing the organization commander an opportunity to inspect the condition of the men, their clothing, equipment and arms. Held at the close of the day, and under arms, the commanding officer will avail himself of this opportunity to see that his men have cleaned themselves and their equipment properly.

27. Reveille should not be held under arms, especially in a mounted command. It is for the purpose of getting the men out and starting the day's work, and the first thing is to feed and clean the horses, taking about ten minutes; then the men will wash up, police their tents, and get ready for breakfast. In permanent camps, where

conditions admit, a short, brisk setting up drill, to get the blood in circulation and the pores of the skin open, followed by a swim, will be found of great advantage in starting the day right, and in keeping the men in splendid physical condition.

28. In making and breaking camp it is important that the same detail that takes down and packs the officers' and kitchen tents in the morning, shall put them up when the next camp is made, and that they know they are to do so. They will then observe how things are arranged, will pack with a view to facility in unpacking, and when the wagon is unloaded, will be able to select the tents and property without confusion and a lot of talking. Having details change as the new camp is made, puts the men at a great disadvantage for quick, smooth work.

29. Every officer should have not only a canvas bedding roll but a regulation clothing roll. These can be purchased from the government. They should then be plainly marked with the officer's name, rank and organization, where they will show when rolled up.

MAKING AND BREAKING CAMP, USING THE SQUAD SYSTEM

30. Because so few organizations have seemed to appreciate the value of using this system in making camp, it seems wise to describe it in detail, giving a picture of its workings. And because the cavalry have no system prescribed at present, the picture is drawn for a cavalry troop. It may be easily adapted to an organization of any other arm. It is understood that each captain is expected to use his own ingenuity in the administration of his own command; and the following system should be considered a standard, not that you should follow, but below which your own system must not fall in efficiency.

31. As troops run in the regular service, your peace time organization will consist of the first sergeant, quartermaster sergeant, the four permanent squads each under a sergeant and containing two corporals and about ten or

twelve men; and a fifth permanent squad, called the "stable crew." Thus will your working force be organized in teams, to whose leaders you assign the work to be done.

32. If carrying canvas, there will be one conical or pyramidal tent for each squad, a tent for the first sergeant, a store tent for the quartermaster sergeant and supplies, canvas for the kitchen and rears, and one or two wall tents for the officers.

33. The troop acting alone reaches camp. The captain decides where he will put the troop as he arrives upon the field, and halts in line approximately where the picket line will be. He dismounts the troop, unbridles, strips saddles and ties horses in pairs, as in pitching shelter tent camp. While the chiefs of platoons superintend this, the captain will ride over the field with his orderly and the guidon sergeant. He will select the line for the troop tents, pointing out the site of the first sergeant's tent to the guidon sergeant, who marks it by planting the guidon at the front tent pole, and then returns to the troop, dismounts and rejoins his squad.

34. The captain continues his selection of sites for the kitchen, store tent, and officers' tents, picket line and rears, and, if the wagons have not yet arrived, may include an investigation of the water and wood supplies. (If a surgeon is with the troop, he should investigate the water immediately and report to the captain, in time to publish any necessary regulations to the troop before they break ranks.) This selection of sites is generally necessary. The normal camp prescribed in regulations, like the normal formation for advance guard, is to explain the principles, and is to be adapted thereafter to the ground as you find it. Keep the kitchen and stores on the flank next to the officers, away from the picket line and rear, and use the ground to the best advantage. The captain returns to the troop, assembles the officers, quartermaster and stable sergeants and squad leaders and points out to the leaders concerned the location of the various parts of camp. The

first lieutenant, with the squad leaders, may pace off the distances from the guidon, and indicate to each squad leader the definite location of his tent. Here, again, exactness of interval is disregarded in selecting suitable ground to sleep on. The second lieutenant may take charge of locating exactly the site of the kitchen, the store tent, and the picket line, pointing out the first two to the quartermaster sergeant, and the picket line to the stable sergeant. The captain will meantime ride over, dismount, and carefully select the exact location of his own tent, marking it by planting his saber at the front pole.

35. Meanwhile, the troopers have been under control in ranks beside their equipment. If the wagons have not yet arrived, the captain must employ the intervening time to the best advantage, regarding the comfort of the men and horses. The men's equipment may be carried into squad piles in front of their respective tent sites, the men getting out soap and towels and washing up, if suitable water be available. If this be done, it must be under control and by order. If nose bags have been carried, containing the noontime feed, the horses may be fed while standing tied in pairs. If the bags are as usual empty on the ends of the rolls, the stable crew may now collect them, and be ready to fill them quickly after the arrival of the stable wagon. The delay may be long enough to justify unsaddling and allowing the horses to graze and roll under the individual care of the troopers.

36. When the wagons arrive, the kitchen wagon is halted near the kitchen, and the stable wagon near the picket line. The next step depends upon the presence of a fireless cooker. If you have one, and it be after eleven o'clock, the following steps will be in order: open a temporary straddle-trench rear, stretch the picket line, tie on the line and feed; wash up, and eat a hot lunch, then a quiet half hour or so for a pipe and digestion. Then everybody up and form by squads to pitch camp. If not so wise as to be provided with a fireless cooker camp must *be pitched at once.*

37. Let us now see what our arrangement is for this. The first sergeant will have supervision, like the captain, watching out for good discipline and quiet efficiency. The quartermaster sergeant is probably the mess sergeant also. He has greater responsibility, and by adding the duties of mess sergeant, may receive some compensation in the six dollars additional pay allowed. These duties work well together; and are, now, to supervise, first the kitchen, then the store tent and supplies. The stable sergeant sees to the picket line and care of the horses. This leaves the four permanent squads. There are two general systems of using these. One, to have the same men do the same work each day; the other to alternate the squads daily. In the former you can soon acquire a degree of smoothness and dispatch that will put you first in any competition. But it is not advisable, as your men do not get equal training, or equal distribution of work; bad also for discipline. It is better that the squads alternate daily in regular order. It is important that the new details go into effect in the morning. The squad leaders soon come to know without being told what their work is for each day.

38. Let us say, then, that this is the day for the first squad to be on guard and to load and unload the wagons. The second squad to take care of the officers' tents and rear. The third squad to take charge of the kitchen; and the fourth squad to see to the troop rear, the first sergeant's tent and store tent.

39. The same men of the first squad who loaded the wagons in the morning will now unload them. They know where the property is, and how put on. No one else should be allowed on either wagon. Avoid confusion by eliminating volunteers, and by everybody doing only what he is told by his immediate leader. The unloading detail expedites getting the property into the hands of the men sent to get it. These men do not take things off the wagon unless told to.

40. The first articles off the kitchen wagon will be

the mess outfit, the range, possibly the ration box. The third squad takes these and the kitchen tentage and utensils. It is the pride of every troop to be first with its kitchen fire, and the officers always note the chimney that belches smoke first. The mess sergeant will have chosen the exact position of the range, and the cooks will be ready to assist in setting it up, and with wood to start the fire. Three men of the third squad immediately go with two boilers and two buckets to bring the water which must boil before the coffee is made. The mess sergeant meantime tells the squad leader exactly where and how he wants the kitchen canvas put up, where the pit is to be dug for slops, what is to be done about wood supply and additional water, where the mess box and other supplies are to go. When the third squad leaves, the kitchen should be complete, and it should be the squad leader's pride to make it the best possible. Everything is done to expedite serving hot and clean food. Even a brush windbreak may be necessary for the kitchen fire.

41. The second squad takes the officers' tents and bedding rolls, its own mallet and spade, and proceeds to put up the officers' tents, ditch them if the captain so directs, open the bed rolls, put up the cots, and open the rolls on them. They do not make the beds. They get a bucket of water, driving the pins for the wash basin, and in general arrange the tents as they found them that morning when they packed up. They make a straddle-trench rear, covered by a tent, or not, as the captain directs. If the officers have a mess chest and table, they place them where directed.

42. The fourth squad sends four men with the rear tent and spades to erect the troop rear, the others put up the first sergeant's tent, put in the field desk, and arrange it as they found it that morning. They then put up the store tent and put such supplies into it as the quartermaster sergeant directs.

43. The stable crew put up the picket line. They then fill the nose bags for the noon feed, and the horses are fed as they are tied on the line. Circumstances may exist, especially where the troop is part of a squadron, which will make it advisable for the line to be put up, and the horses tied thereon, before the men go to pitching the camp. In this case the squads would be formed again after feeding, so that the above system could be carried on under control.

44. When the first squad has completed unloading the wagons, they will distribute all the squad tents, pins, and tent poles at the tent sites designated for the respective squads.

45. Each squad will have its tent, sack of tent pins, tent poles, mallet, axe, bucket, lantern, etc., plainly marked so that there can be no question as to ownership. It is found most serviceable where each squad leader carries in a scabbard on his saddle a folding steel axe, or bolo.

46. A fundamental rule for all field work is that while work is being done the men shall all be kept together under their immediate leaders. The leader then designates certain men to perform certain duties. These men do their work and return immediately to the formation, reporting to the leader the accomplishment of their task. No one is supposed to work on his own initiative where system prescribes direction and furnishes directors.

47. In making camp, no one need stand about idle. The squad leader can find work for all. The surplus men in the squad might well be sent out to cut three green sticks, two crotched, for use in putting up the squad saddle rack. Material might also be gotten together for the squad arm rack inside the tent.

48. When each squad has completed its assigned task, the men will go together under their squad leader to put their horses on the picket line and feed them, if this has not been done already by direction of the captain. The captain will have directed the stable sergeant in case he wishes the horses unsaddled at this time. They probably may be, and the men may bring their saddle equipment with them back to their tent.

49. In any event they will now proceed to put up their squad tent, and prepare it for occupancy. The question of ditching will be decided in each camp by the captain. Internal arrangements of tents may be prescribed by the captain so as to be uniform throughout the troop; or, even better, he may leave all this to the individual initiative of the squad leader, and by frequent inspection and commendation and comparison stimulate the squad leaders to a healthful rivalry in making their tents the best.

50. By working thus systematically, you will find that the camp has been put in shape in a surprisingly short time. The men may now wash up and go to lunch, which should be ready about this time, knowing that they will have ample time for rest thereafter.

51. The form of the picket line may be the usual straight line or three sides of a square open toward the troop. If a ground line, it may be laid in one form as easily as the other. Its position in front of the troop, or in prolongation of the troop, will be governed by local conditions. The former has the advantage that no sentinel need be posted until after dark. The troopers understand that all are on guard all the time as far as assisting a horse in trouble is concerned. On dusty ground, however, this position of the line often has the disadvantage of making it disagreeable for the men at their tents.

52. Immediately after retreat inspection, the first squad will be reported by its leader to the captain for guard duty. The captain inspects it and gives instructions for the running guard that night. It is generally enough for sentinels to be posted from right after dark until reveille, when the guard relieves itself. This stable guard is generally the only guard necessary for a troop in the field. The sentinel wears his pistol and carries a lighted lantern; if an improvident cavalryman without a knife, he must borrow one in order that he may cut a strap in an emergency. It is generally true that each man will lose but one hour's sleep during the night. With disciplined troops these men post themselves, each man before he goes on post learning who relieves him and where this man sleeps, so he can awaken him quietly at the end of his tour. In some cases it is better to have a noncommissioned officer awakened each time the relief is changed. The sentinel's orders require him to confirm the number of horses under his charge when he comes on post, and to awaken the squad leader in case of serious trouble.

53. In case the troop is part of a squadron, the above system is applied as far as possible. The major will have selected the camp site, and one of his staff will be on the ground to show each guidon sergeant where his troop is to camp. Upon approaching the field, the captain sends his guidon sergeant ahead for this purpose. He will then halt the troop on the guidon, and dismount as before, and get any necessary directions from the major before specifying the sites for the various parts of the camp.

54. In addition to the work above described, there is now introduced the question of taking care of squadron headquarters. This can best be done by letting all the work at headquarters be done by one troop, the troops alternating daily for this duty. Depending upon the amount of work to be done at headquarters, and upon the size of the permanent squads in the troop, each troop commander will handle this task to the best advantage of his men. It may be that when his turn comes he can make up a headquarters detail from a surplus noncommissioned officer and surplus men from the different squads, or he may choose to divide the work equitably, and let a regular squad include this headquarters work as part of their task for that day. Whichever system he employs, the same men who packed up headquarters in the morning, would now be sent to unload and set up the tents, and arrange them as they had found them in the morning. For the credit of his organization, the noncommissioned officer in charge of this detail should take pride in performing it to the highest satisfaction of the headquarters officers.

55. Let us follow the breaking of camp the next

morning. To-day's first squad takes up the work performed yesterday by the second squad. It takes down and packs up the troop officers' tents, their rear tent, filling in the trench, packs bedding rolls and other property, and takes everything to the kitchen wagon. As they do this the men realize that they are going to be the ones to put up these tents and arrange them when they make camp at noon, and are careful to observe how things are arranged, and careful in putting away loose tent pins, and to see that everything is so packed and put on the wagons that it may be recovered and unpacked and put up with facility. To-day's second squad now takes the work of yesterday's third squad and packs up the kitchen outfit, governed by the same considerations above mentioned for the second squad. In the same way to-day's third squad takes charge of the rear, packing the tent, filling in the trench, packing the first sergeant's tent and the store tent. And yesterday's fourth squad, now become the first squad for today, loads the wagons. It is important in this connection that one man be permanently detailed to supervise the loading of each wagon, preferably the quartermaster sergeant the kitchen wagon, and the stable sergeant, or one of his men, the stable wagon. Members of the squad detailed to load work under the directions of these men.

At squadron headquarters also there must be one man permanently in charge of loading the wagon, probably one of the noncommissioned staff.

56. After last evening's feed the stable crew collected the nose bags and filled them for this morning's feed. At reveille the troop falls in without arms, but with currycomb and brush. And immediately after reporting, the first sergeant marches them, without counting fours, to the picket line, where each takes a feed bag and then takes his place in rear of his horse, and at the command of the first sergeant all feed simultaneously. The men then clean their horses, the whole process not occupying more than five or ten minutes. The men then wash up for breakfast *and make their ind*ividual rolls and generally prepare for

the march. After breakfast, sick call and police call, the captain has signals sounded on the trumpet for each step in breaking camp. At the last note of "the general" the men's tents should fall simultaneously toward the officers' tents, and the squads hasten to pack them and carry them together with the tent poles and pins to the wagon. If the troop be part of the squadron enough men from the squad in charge of the officers' tents must be sent to drop these tents simultaneously with the men's, in the direction of headquarters.

57. Unless especially directed to do so, no one will commence saddling up until "boots and saddles." In forming the troop for the march, some captains prefer to reward celerity by allowing the first men ready to fall in on the right of the troop, where they may march free from dust. This often results in carelessness in saddling and consequent injury to the horse. Far better to have the men form by squads and to form the troop so that the squads alternate in the column daily in regular order as their duties change. For example, each morning the squad for guard duty that day might form on the right of the troop. A troop that has any *esprit* will work rapidly enough at this time, and it is so much better to give careful attention to saddling up, particularly where there are recruits in the troop whose work in saddling should be supervised by experienced men, who may even have to assist them.

58. The stable crew should be authorized to saddle up at will. The troopers remove their horses from the line at "boots and saddles," and the stable crew busy themselves in taking up the line and pins, and packing them on the stable wagon. The last thing the captain is going to do before leaving will be to make a careful inspection of all the ground, including the rears, to see that everything is in perfect police. If it is not, the troop will be dismounted and sent to police it. It behooves everyone, therefore, to observe the rule for policing, which is to "*keep the ground* policed."

59. The cooks may ride, one on each wagon, with the driver. The quartermaster sergeant or the stable sergeant, and at least two men, generally from the stable crew, regularly march with the wagons to assist in emergencies.

60. Injured or sick horses are led in rear of the wagons. When the troop is part of a larger command, these led horses from the various troops are assembled in one group and led behind the whole wagon train, *not* intermingled throughout the train, each behind its own troop wagons.

CHAPTER XXIII

SUPPLY AND TRANSPORTATION

1. THE War Department has accepted a fundamentally new system of supply for troops in campaign. It is based on the idea that instead of the fighting troops having to give time and energy to providing their own food and forage, they shall be left free to give all their attention to fighting the enemy, and their supplies shall be handed to them each evening by troops especially engaged in this important work. These latter troops are known as the Line of Communications; and their commander, in constant touch with the commander of the fighting forces, uses them for the one purpose of getting the supplies up each evening. This will be supremely important work and will call for the highest executive ability and often for indomitable perseverance and ingenuity on the part of officers and men.

2. In this system all wagons other than the combat train are assembled in regimental trains, no company or troop having a wagon of its own. In an infantry regiment, this train consists of 12 wagons, 8 for rations, 4 for baggage. In a cavalry regiment, it consists of 22 wagons, 5 for baggage, and 17 for rations and forage. Each organization is allotted its space in one of the baggage wagons. All the loads of the supply wagons are in the exclusive charge of the regimental quartermaster.

3. At the close of the day's march or fight, a supply wagon will come to each organization and deliver to it one day's ration, to be used for the next three meals, a hot supper, hot breakfast, and cooked lunch the next day. On any given day all organizations in the command will have exactly the same food supply. This deprives the commander of that cherished function, so valuable in *"leadership,"* of providing particularly for his own men; *but it leaves him* free to give attention to other matters,

and provides better for those men under officers incompetent or too shiftless to make proper provision.

In the same way a supply wagon will deliver each evening a day's forage, for the two feeds in camp and the next day's noon feed to be carried in the feed bags. Both ration and forage wagons return to the train as soon as the issues have been made.

Likewise the baggage wagons will join the troops each evening and distribute tentage, cooking utensils, etc., and remain with the troops until reloaded next morning.

4. This system contemplates reducing to the minimum the amount of transportation with the fighting forces, a most important consideration. It means that each officer and man will carry an exactly prescribed amount of baggage and equipment, not one brush, shirt or bottle more, or less. This will be a great gain for efficiency—and should be an interesting and instructive thing to practice on some peace maneuver. Let the men know they are going out stripped to fighting conditions—and then every one exercise his ingenuity to make the tour as comfortable as possible under these conditions.

5. Under this system the "savings privilege" ceases to operate as soon as the troops reach the mobilization camp. That is, the organization no longer gets a cash credit from which to buy rations. The supreme commander from now on prescribes what the daily ration shall be; and all get the same. It is to be expected, however, that where government transportation is not involved, organization commanders will still exercise their function of adding to the mess as they can from outside sources.

6. While this system will apply to large forces operating in the field, it cannot be used with smaller detachments. When the company or battalion operates alone it must have its own wagons, and supply itself.

Whenever conditions make it impossible for the Line of Communications to deliver supplies, the old system must be resorted to. And it is this old system that requires *training and individual* understanding on the part of the organization commander. For this reason the following paragraphs are of value for guidance when you are operating without supply troops, as you are most likely to be doing in peace time training.

7. Your men and horses must be properly fed three times a day, and it is intended they shall be. The Government most liberally provides for this; and it is strictly up to the organization commander to see that his men are properly fed.

The system of garrison supply is simple, and amounts to this, your ration return gives you a cash credit with the commissary officer. In other words, you are liberally supplied with cash for the purchase of food supplies, with the one condition that you are required to purchase from the commissary officer whatever you need of those articles that he has on hand for issue to troops—beyond that you may buy in the open market. It is necessary then that the organization commander and the supply officer work together with perfect understanding, and always from one to three days ahead of time for the supply of troop messes. In case of the failure of the commissary to furnish supplies at any time, it is absurd for the organization commander to sit down helplessly and join his men in grumbling and cursing out the commissary, it is his job rather to get busy at once and find suitable supplies either at a farm house or at a grocery store, buying them for the use of his men, taking proper receipts, and reporting this action to the proper authority. The one foundation on which to build troop spirit and efficiency is a good troop mess; and it should be the captain's most serious daily care.

8. The first step, however, is to be sure that you have submitted proper ration returns, then that you have notified the supply officer in ample time what supplies you will want; next see that each of your men always has with him the prescribed two reserve rations. These consist in bacon, hard bread, sugar and coffee, and should be taken from the regular ration, and issued to the indi-

viduals upon going in the field, and should always be replaced as soon as possible after being used. With the liberal ration allowance, and the authority placed in the hands of the organization commander, it is unreasonable that in this land of plenty men should ever have to go hungry, and it will be the fault of their immediate commanding officer if they do.

9. Every officer and noncommissioned officer should be sure that he understands the details of the ration return, and be sure in his own mind of his rights and his responsibility in the matter of supplying his men, for at any time in service anyone of these men may find himself alone, with the responsibility of caring for a group of men.

10. The fundamental necessity for successful supply is *planning ahead,* knowing to-day what you are going to need to-morrow, or at the next point of supply. For example, on the march the company commander will notify the commissary each day what quantity and kind of fresh meat, bread, etc., he will want at the next camp. This enables the commissary to prepare for its delivery and proper issue. You should look upon the commissary as a purchasing agent for you, not as a wholesale grocer and butcher who always has on hand whatever you may desire at the moment—you and he have got to plan ahead for what you will want. This makes it important that commanding officers should notify their subordinates of their contemplated movements, and again, that they should not change their plans after once announcing them, unless it is absolutely necessary.

11. Arrangements should be made so that when on the march men may be given their mid-day meal almost immediately after reaching camp, and the most helpful auxiliary to this is the fireless cooker. One of these can be easily made from a good-sized dry goods box, padded with hay held in place by old saddle blankets, leaving room for two large milk cans that will carry enough food and coffee for the command. The cooks will fill these *with boiling hot* contents after supper the night before,

put them in the box, stuffing hay in about them, and close it; this box will be loaded at the rear end of the wagon, and a hot meal may be served the instant the wagon arrives in camp. Many troops in the regular service take a light spring wagon with them in the field, which carries the fireless cooker, picket line, and other small conveniences, and reaches camp ahead of the command. When the troop arrives the picket line is ready to be stretched and the lunch ready to be served. This adds tremendously to the comfort of the men and the *esprit* of the organization.

12. Where the fireless cooker may not be carried near enough to the troop for use at lunch time, and the day's work is going to make it impracticable to have lunch before late afternoon, the organization commander will anticipate this by having the cooks prepare bacon sandwiches, which the men will carry individually, for the next lunch.

13. Remembering how hungry and "raw" you have been during that long hour's work from eleven to twelve, if work is to be continued past the mid-day meal, have the lunch served at eleven instead of twelve. The men will not be so ravenous, and it will be more satisfying. They will be spared the strain of that last hour's work under trying circumstances, and will go to work after this timely lunch in much better spirits.

14. It is equally important that the horses be properly fed. The equivalent to the lunch for the men is about six pounds of oats tied in the bottom of the nose bag and carried on the cantle of the saddle for the mid-day feed.

15. The emergency ration has been given up. It is now directed that each man carry two reserve rations, under the same regulations as formerly applied to the emergency ration, except that the bacon component is to be renewed frequently enough to prevent deterioration. *Except in an emergency* to justify it, it is never to be *used without* the authority of a commissioned officer.

Each soldier must always have it with him, and if it has been used or lost he should report the fact at once, and have it replaced.

16. Particularly in the cavalry, where patrol work separates men from their mess, it is important that every man know enough about cooking to prepare his own meals. He should be able to make good coffee, and to use his bacon to the best advantage, not only in the cooking of the bacon itself, but in using the bacon grease to fry potatoes, onions, make egg bread, etc. Practical instruction should include intelligent, interested training in individual cooking. In certain organizations it is the rule during the winter training for say six designated men each week to prepare their own evening meal. They receive the articles of the ration, and each man actually cooks his own food under the supervision of some practical man who knows how to cook satisfactorily under field conditions. The first consideration, which so many miss, is that the fire be small.

17. Every consideration seems to point to the great advantage of company officers getting their meals from the organization kitchen in field service. The officer responsible for the excellence of the mess will much better appreciate its excellence if he subsists exclusively on it. When it comes time to break camp in the morning, the officers will be through with breakfast at the same time as the men, and in position to exercise their proper functions of supervising the work of the men in breaking camp. Where the officers have a mess of their own, the temptation is always present to be late at breakfast, and particularly is it true that the loading of the company wagon is often delayed waiting for the officers' mess to be cleaned up, packed up, and loaded. This is a constant source of annoyance to the men of the company, and an unreasonable drain on their *esprit*.

18. When the men have a poor breakfast, sloppy coffee, cold, half-cooked, greasy food, they cannot be expected to work cheerfully through the long hours of the forenoon. If their commanding officer has partaken of the same breakfast, he will appreciate their feelings, and avoid making too great demands on their good nature. Even better, he will probably get busy and see that they have a proper breakfast the next morning. If a battalion or squadron headquarters mess is necessary, it should be kept as small in number as possible, and provided with such service that it can be cleared up and out of the way so as not to delay the movement of the troops in the morning.

19. It is necessary in the field that each soldier wash his own dishes after each meal. The greatest care must be exercised not to scatter food or greasy water on the ground about the kitchen. This is one of the necessary disagreeable field duties for the men. Where practicable the use of paper dishes is a great saving all around. When the man has finished his meal, he has only to put the plate on the kitchen fire, and wash his cup, knife, fork, and spoon. The cooks should provide at least two good sized receptacles of hot water for this purpose.

20. The fundamental principle for the mess in the field should be plenty of plain food, well cooked. The men are taking an unusual amount of exercise in the open air, and will have good appetites which crave hearty food. Salads, desserts, and fussy dishes are entirely out of place. Cucumber pickles to supply acid, and bread and molasses to satisfy the craving for sweets, are generally most acceptable. Everything about the kitchen must be scrupulously clean. What we want to avoid is feeding flies, and remember that a fly feeds not on a half-pound hunk of meat or bread, but on the invisible particles that are carried in the waste water from washing dishes, etc. Every man in the organization must make it his personal job to prevent feeding flies and encouraging their presence.

TRANSPORTATION

21. As shown above, the new system of supply affects the use of transportation, and as in that case so here, the following paragraphs apply to the use of wagons by troops operating independently of the Line of Communications.

22. Troops in the field are dependent for supplies on their wagon transportation. More hardships come from failure and delay in transportation, than from any other cause. It should be the interest of every individual to assist in every way the success and smooth working of the train. The standard wagon is the four-mule army wagon, whose normal load on good roads is 3,000 pounds.

23. The proper loading of these wagons is of the utmost importance, and every soldier should understand generally how to load a wagon. The fundamental principles are that the heaviest articles go on the bottom, and that those things which are needed first upon arrival in camp, are so placed as to be unloaded first. This sounds easy, but the actual loading of the various articles so as to avoid shifting and to carry safely, requires practice and experience. While every man should know something of this, it is advisable to have one skilled man continuously in charge of the loading. This is an important part of practical instruction.

24. Draft animals should have the best of care, both in camp and on the march. The organization commander should take special interest in them. He will also interest himself in seeing that the harness is kept clean and soft, and in good condition, and that the wagons are in good repair, wheels greased daily, and everything about his transport in the best possible condition to make the march.

25. It is of the greatest importance that the amount of supplies, baggage, etc., to be hauled, be consistently regulated to the amount of transportation available. For any particular service, the exact articles of clothing, equipment, and troop equipage to be carried, should be prescribed before starting. It is then the duty of the organization commander to see that these regulations are exactly complied with, the men carrying neither more nor less than the prescribed amount. While the construction of elaborate mess-chests, etc., shows commendable zeal on the part of mess sergeants, their presence in the field is a curse to transportation and efficiency. The troop commander must ruthlessly leave them behind. He and his officers must join this labor-saving class by doing without trunks and other heavy baggage.

26. While the train is en route it should be the interest of everyone connected with it, including the men of the escort, to assist in every way in making the march as easy and as expeditious as possible. No one is allowed to ride on the wagons without proper authority. Where a load shifts and the wagon has to be reloaded, the escort will assist. If a wagon breaks down they will assist in transferring the load to other wagons. Wagons should always be halted on the right hand side of the road to allow free passage to others.

27. The principles of traction, proper hooking of the horses into wagons, and proper driving of the teams, are matters of great importance. Where a driver is seen abusing his team or exhibiting gross ignorance or carelessness in handling them, it should always be reported to the organization commander, who will take steps to remedy it. So much depends upon the safe and prompt arrival of the train, and the speed of the train will be that of its slowest wagon, so everyone should be interested in the success of every wagon, no matter whose.

28. Whenever lightened loads, road conditions, etc., make it practicable, commanding officers will take occasion to relieve the men and horses, or to relieve particularly those who are not up to the standard of strength, of the burden of carrying part of their equipment, by putting it in the wagons.

The operations of cavalry are likely to require troops to move without wagon transportation. They may even have to go without a pack train. It is practicable to provide for this by packing on the army saddle, on led horses, the absolutely necessary supplies and equipment; a picket ground line, rations, and a grill for the kitchen fire, with boiler and pans. Many troops keep this equipment with the necessary attachments for the saddle all ready prepared.

29. **Travel by Railroad.**—To make entraining and detraining expeditious and successful the following considerations must be observed by all: Troops should remain in ranks. All work should be done by designated details who should go and do exactly what told and then return to ranks, the man in charge reporting its accomplishment. Men should not do anything without explicit instructions. This is an occasion for absolute direction and control by officers. Confusion and generally delay are the invariable results where men attempt to work on their own initiative.

30. In entraining, the inspection of the cars, their proper equipment and the arrangement of all facilities for loading are the proper functions of the quartermaster. The commanding officer, having acquainted himself with all facilities, will carefully arrange in his own mind the details of how his command can best be loaded. He will then give detailed instructions to his subordinate commanders, and assure himself that they all understand their various parts and places before the troops make any movement toward entraining. He should thereafter insist upon quiet, system, and discipline. The presence of individuals standing about the platforms or tracks is a sure indication of lack of system and discipline, and only leads to confusion. Men should be in ranks, actually working or else in their place on board the train.

31. In loading horses, the four men detailed inside the car, two for each end, should be carefully selected for their known horse-sense, strength and ability to handle horses. The quieter horses should be put in the centre of the car opposite the doors. Where stalls are not provided, horses should be packed into the car closely, one rule being, after the car is filled pinch in another horse for good measure. *If the journey* be any distance the horses' docks

should be wrapped to avoid rubbing the hair out. Care must be taken that these wrappings be not tight enough to impede circulation. The question of tying the horses is open to argument, with the preponderance in favor of leaving the horses loose in the cars, packed in alternately head to tail.

32. The senior noncommissioned officer in each passenger coach is responsible for the good order within his coach; he will see that proper police regulations are observed and his car kept clean. If necessary, guards are stationed at each door to prevent men riding on the platforms, and leaving the car without authority. At the various stops men should never leave the car without authority.

33. In *detraining,* the commanding officer and his staff will be the only ones to leave the train upon reaching the destination. He will investigate facilities for unloading, select places for company assemblies, picket lines if necessary, baggage, etc., and will work out in his own mind the detailed system in accordance with conditions as he finds them for unloading his command most expeditiously and smoothly. He will then instruct his subordinate commanders, and when they know each what he is to do, will give orders to detrain. Again it is important that the troops keep in ranks and that work be done by designated details. An officer should inspect each car as soon as the troops leave it, both for its proper police and condition, and to see that nothing has been left behind.

34. In unloading the horses, a detail should go to the horse car to receive the horses as fast as they can be led out, and lead them to the picket line or ground designated for saddling up, where they will be tied up or handed over to horse-holders. One man should lead two horses. It is important that this detail keep the horses moving as fast as they can be delivered. The horses having been assembled, and the horse equipment unloaded and arranged, the organization will saddle up at the command of its commanding officer. No individual should saddle

up before this command is given, unless especially directed to do so. Every individual, officer or man, should be careful to keep passageways free, and by carrying out strictly the instructions as to the designated place for saddling, etc., avoid interfering with the work of other men or organizations.

35. In preparing for travel by rail the commanding officer must prescribe exactly what shall be taken and how it shall be packed for transport, and these regulations must be carefully observed. It is particularly important that the men carry into the coaches with them exactly what has been prescribed, no more, no less, and that the packages containing their equipment, whether individual or squad, be made up and marked exactly as prescribed.

36. When a railroad station, at which troops would naturally entrain, is occupied or threatened by a crowd or mob, the commanding officer should cause the station to be cleared of people, or cause sufficient ground near the station to be cleared for the reception of his command and the train. He should then have the cars run inside his line of guards, and proceed to entrain his men; the various military units being kept together so far as practicable.

Where there is reason to believe that the railway station at the destination will be obstructed by a crowd or mob, the train should be stopped before reaching it, and a patrol sent out. If necessary the troops may be detrained outside, but as near the station as practicable.

CHAPTER XXIV

SANITATION

1. THIS is one of the most interesting and helpful subjects for your study, a thorough understanding of which will be of value to you in civil life as well. Since the terrible experiences of our camps in '98, the whole service has recognized the necessity for intelligent consideration of the rules of sanitation in all field work; until now it is true that our largest concentration camps, even under the unfavorable physical conditions of the border and of the tropics, are models for healthful living, and their records show a lower sick rate than any city in the country.

Sanitation is the initial care of the Medical Department, and when commanding officers carry out its recommendations we may expect satisfactory results. Too often, however, conditions of the service make full compliance impossible, and a compromise between expediency and the ideal must result. Fortunate indeed is that command in which the surgeon and commanding officer are frankly working together to guard the health and general welfare of the men—for either alone may go to extremes that are injurious, while if they freely advise together a happy mean should result.

2. Any system of sanitation fails that does not enlist the co-operation of the line officers and men. Conditions are conceivable in which the men would better take chances of disease than be worn to death with unusual hardships in trying to bring about ideal sanitary conditions. Both parties must be reasonable, and for the doctor as well as the commanding officer stands that fundamental principle of reducing to a minimum the hardships of the men.

3. When making a camp, the surgeon must quickly decide upon any sanitary measures he may recommend to *be inaugurated,* so that the necessary fatigue details may

go about them at once. This work should be cleaned up with the rest, so that when the men have composed themselves for rest or diversion they will not be upset by the arrival of an orderly announcing a fatigue detail.

4. In permanent camps elaborate arrangements may reasonably be made for the sanitary disposal of wastes, human and otherwise. But of these, the best will be such as entail the least disagreeable fatigue duty on the men. The daily emptying and disinfecting of urinal cans is of this class. If the nature of the soil admits, use instead the megaphone urinals, Fig. 19, conveniently located, which will require no attention after being installed. This megaphone urinal is made as follows: a post hole or well is dug of suitable size conveniently near the tents; this is covered by a board containing a round hole about two or three inches in diameter, and the board covered again with the earth and sod; a funnel, made of heavy oiled cardboard or other impervious material, about 30 inches high and 6 inches wide at the upper end, is set upright in this hole in the board, packing the earth around it; a piece of board laid on the top forms a cover. The whole thing is fly proof, odorless, not unsightly, and if the soil be pervious, does not require further attention during the camp.

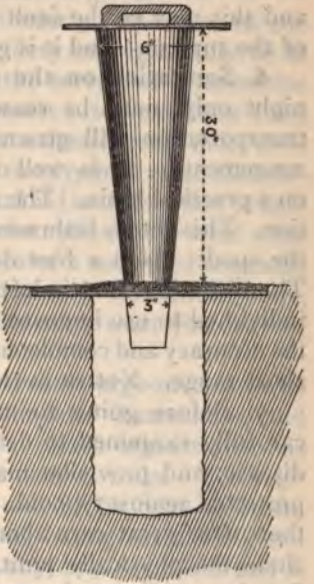

FIG. 19

5. There should always exist an *entente cordiale* between the enlisted men and the surgeon. The best interests of the service demand that the men go frankly to the surgeon with even small troubles, which left without

treatment, or even worse, with unskilled treatment, will often develop, and incapacitate the man, and in the case of infectious disease, may even cause sickness and injury to his fellows. It is, therefore, part of the surgeon's task so to conduct his work as to appeal to the reasonableness of the men, enlisting their loyal support of his sanitary precautions and making them regard him as one solely interested in their welfare. Too often the reverse is true, and this may be the fault of the commanding officers, or of the surgeon—and it is generally the fault of both.

6. Sanitation on the march and in camps for one night only, must be reasonable. In campaign, lack of transportation will generally eliminate all elaborate arrangements. It is well to learn to care for the men on a practical basis. The *straddle trench* is one sure solution. This entails little work, the trench being the width of the spade, about a foot deep and any convenient length. The dirt excavated is left in piles at the ends, ready for individual to use in covering. The advantage here lies in the accuracy and completeness with which he *covers* at this short range. Not so in the old-fashioned large trenches.

7. Before going to mobilization camps troops are carefully examined to detect the presence of contagious disease, and provision made that all be vaccinated, and protected against typhoid. In undertaking any expedition thereafter great care should always be exercised to exclude the physically unfit. Be hard-hearted about this, for the presence of one weakling may mar the whole expedition.

8. Every soldier should be eager to learn the proper uses of the first aid packet. Not only may such knowledge enable him sometime to save himself, but even better, it may enable him to minister intelligently to a wounded comrade. Practical instruction will give him opportunity to learn this. He should not be satisfied with looking on from a distance, but should actually handle, and be sure he understands the proper use of, the contents of this precious package. In no one other thing has the Medical Department done so much to alleviate the horrors of the battlefield. Let the men go to the surgeon's lecture in the above spirit, let surgeon force himself to speak the men's language, confine himself to the few practical uses that the men may remember, and instruction in first aid becomes the vital, interesting thing it should be. Commanding officers are responsible that this instruction is given.

9. This knowledge is particularly important to the cavalryman. Infantry and artillery may generally be in touch with their surgeons. In the service of information it is accepted that the cavalry must often cut loose from their ambulances, and the advance detachments must even go on without surgeons. The cavalrymen must then depend upon themselves for medical aid and attention in case of injury and sickness. And when you realize what your feelings would be in the presence of a wounded comrade, if you were incapable of ministering to him intelligently, you will now give attention to learning what you may of proper treatments.

10. On the march the regimental surgeons are to be found, the senior with the regimental commander, and one at the rear of each battalion. Each organization has a litter, generally carried on the combat train. The regimental ambulance follows the rear of its own regiment, unless otherwise directed. A man falling out sick is given a pass showing his name, company, and regiment, and is sent to the surgeon in rear. He keeps his arms, personal equipment and clothing, and if mounted, sends back his horse and equipment by the man who accompanied him.

11. In combat *regimental aid stations* are established by regimental surgeons, one for each regiment, or one for each battalion, under the best available shelter near the firing line. Further in rear, a *first aid station* is established by the ambulance company, and still further a *station for the slightly wounded,* by the field hospital, in case these units accompany the expedition. To the most convenient

of these the wounded direct themselves, or are carried by the sanitary troops. The regimental station is kept as near the firing line as possible, advancing with it, the first aid station following.

The whole system of caring for sick and wounded in the theatre of operations is carefuly worked out and published in the new Field Service Regulations, and will be a matter for careful study in preparation for actual service.

12. In the absence of medical assistance, the wounded apply their first aid packets if practicable, and you may assist a wounded comrade in this. With this exception the care of the wounded devolves upon the sanitary troops, and *no combatant,* unless duly authorized, *is permitted to take or accompany the sick or injured to the rear.* The man who leaves the line to carry back a wounded comrade is now looked upon as a skulker. Your active interest in him must cease as soon as you have taken from him all his ammunition for distribution along the firing line.

13. Before entering upon any active campaign, everyone, officers and men, must be familiar with the pertinent articles of international convention relating to the treatment of the enemy's sick and wounded, members of the medical corps, etc. See appendix 6, F. S. R.

14. With the surgeon and your company commander both regarding your welfare, it is still up to the man himself, if he wishes to keep physically fit, and to come out of the campaign free from disease and the seeds of early breakdown. The following paragraphs from the Manual for Infantry published by the Division of Militia Affairs, are given for the information of all, and the observance of those who think enough of themselves and their one life on earth to take a few reasonable precautions to keep their bodies free from disease.

Care of Health.—History shows that in most past wars many more men have died from disease than from wounds received in battle, and that many a campaign has been brought to naught because sickness had incapacitated the men to complete it. Much of this disease is preventable, and is due either to the ignorance or carelessness of the person who has the disease, or of other persons about him. It is a terrible truth that one man who violates any of the great rules of health may be the means of killing many more of his comrades than are killed by the bullets of the enemy.

Here is a subject for the direct personal attention of every man in the service. It is as much your military duty to be well and strong, as to be skilled in use of your arms. A sick man is of no more value in campaign and battle than a wounded man, or a prisoner, and he is much more a nuisance. Negligently or ignorantly to allow yourself or your men to become sick, is as disastrous to battle efficiency, as to allow them needlessly to be killed and wounded, or taken prisoners. When men and leaders realize this, they will more cheerfully and conscientiously give heed to the rules of health.

It is therefore important that every soldier be impressed with the necessity of keeping healthy, and not only that leaders be trained to guard the health of their men, but that every man be taught how to care for his own health, which will include seeing to it that his comrades also observe the prescribed rules for this purpose.

15. Catching or contagious diseases are the ones mostly to be feared among troops. All of them are due to germs, which are either little animals or little plants so very small that they can only be seen by the aid of the microscope. 1,000,000,000 dead typhoid germs are given in the 15 drops of the second and third doses of typhoid vaccine. All diseases caused by germs are "catching." All other diseases are "not catching."

There are only five ways of catching disease:

(a) Getting certain germs on the body, or touching some one or something which has them on it. Thus, one may catch *venereal* diseases, smallpox, measles, scarlet *fever, chicken pox,* mumps, boils, lice (body), ringworm, barbers' itch, dhobie itch, and some other diseases. Wounds are infected in this manner.

(b) Breathing in certain germs which float in the air. In this way one may catch pneumonia, consumption, influenza, diphtheria, whooping cough, tonsilitis, spinal meningitis, measles, and certain other diseases.

(c) Taking certain germs in through the mouth, in eating or drinking. Dysentery, cholera, typhoid fever, diarrhoea, and intestinal worms, may be caught in this manner.

(d) Having certain germs injected into the body by bites of insects, such as mosquitoes, fleas, and bedbugs. Malaria, yellow fever, dengue fever, and bubonic plague may be caught in this way.

(e) Inheriting the germ from one's parents.

16. Persons may have these germs sometimes without apparently being sick with any disease. Such persons and those who are sick with the diseases, are a great source of danger to others about them. Germs which multiply in such persons are found in their urine and excretions from the bowels; in discharges from ulcers and abscesses; in the spit or particles coughed or sneezed into the air; in the perspiration or scales from the skin; and in the blood sucked up by biting insects.

17. Those who have taken care of their health, and who have not become weakened by bad habits, exposure, and fatigue, are not only less liable to catch disease, but are more apt to recover when taken sick.

18. Knowing all these things, the soldier can understand the reasons for the following rules and how important it is that they be carried out by each person.

19. Stay away from persons having "catching" diseases.

20. If you have any disease, do not try to cure it yourself, but go to the surgeon. Insist that your comrades do likewise.

21. Association with lewd women is dangerous. It may result in disabling you for life. It is the cause of a disease (syphilis) which may be transmitted by a parent to his children. Soldiers with venereal diseases should not use basins or toilet articles used by others, as the germs of these diseases, if gotten into the eye, may cause blindness. Likewise, if they use the same drinking cup used by others, they may give others the disease. They should promptly report their trouble to the surgeon, that they may receive the best medical advice and attention. This may be done privately at other times than sick call.

22. Cooked germs are dead and therefore harmless. Water, even when clear, may be alive with deadly germs. Therefore, when the conditions are such that the commanding officer orders all drinking water to be boiled, be careful to live up to this order.

23. Use the latrines and do not go elsewhere to relieve yourself. In open latrines, cover your deposit with dirt, as it breeds flies, and may also be full of germs.

24. Flies carry germs from one place to another. Therefore, see that your food and mess kit are protected from them.

25. All slops and scraps of food scattered about camp soon produce bad odors and draw flies. Therefore, do your part toward keeping the camp free from disease by carefully depositing such refuse in the pits or cans used for this purpose.

26. Urinate only in the latrines, or in arrangements provided for this purpose, never on the ground around camp, because it not only causes bad smells, but urine sometimes contains germs of "catching" diseases.

27. Soapy water thrown on the ground soon produces bad odors. Therefore, in camps of several days' duration, this water should be thrown in covered pits, or in cans used for this purpose.

28. As certain mosquitoes can trasmit malaria and yellow fever, use your mosquito bar for this reason, as well as for personal comfort.

29. Keep your mouth clean by brushing your teeth once or twice a day. It helps to prevent the teeth from decaying. Decayed teeth cause toothache. They also lead to swallowing food without properly chewing it, and this leads to stomach trouble of various kinds. Food left around and between the teeth, is bad for the teeth, and forms good breeding places for germs.

30. Keep the skin clean. Through the pores of the skin the body gets rid of much waste and poisonous matter. Therefore, remove this, and keep the pores open by bathing once every day, if possible. If water is scarce, rub the body over with a wet towel. If no water is at hand, take a dry rub. Wash carefully the arm pits, between the legs, and under the foreskin, as this will prevent chafing.

31. The skin prevents the sensitive parts underneath from injury and helps to keep out germs. Therefore, when blisters are formed do not tear off the skin. Insert a needle under the skin a little distance back from the blister, and push it through to the opposite side. Press out the liquid through the holes thus formed. Heat the needle red hot first, with a match or candle, to kill the germs.

32. When the skin is broken (in cuts and wounds), keep the opening covered with a bandage to keep out germs and dirt; otherwise the sore may fester. Puss is always caused by germs.

33. Take care of your feet. A soldier cannot march with sore feet, and marching is the main part of a soldier's duty. Even the cavalrymen must be able to work on foot. The exigencies of service may require it at any time. The Germans treat sore feet as a military offense, as it is generally due to carelessness or neglect on the part of the soldier. Wash and dry the feet carefully at the end of every day's march. This removes the dirt and perspiration and makes the skin healthy. It soothes tired feet and greatly lessens the chances of sores and chafing. Do not wander about camp through the grass barefooted, as the

skin may be scratched or the feet bruised, or poisonous weeds may be encountered. If the skin is tender or the feet perspire freely, wash with warm salt water or alum water. For raw or chafed spots use foot powder, which can be obtained at the hospital. Grease or soap, or foot powder applied to the foot or the stocking before starting on the march, prevents rubbing. Cut the toe-nails square (fairly close in the middle, but leaving the sides somewhat longer), as this prevents ingrowing nails. If corns or bunions or ingrowing nails give trouble, or any rawness or rubbing causes pain, go to the surgeon promptly for advice. Do not wait several days till you can no longer march. Do not wear stockings full of holes if you can possibly get others. Wear a clean pair every day, washing them at night if necessary. The light woolen stockings issued by the Government are probably the best to use even in the summer. Should a hole or seam in the stocking begin to cause rubbing, turn it inside out or change it to the other foot. Be careful in drawing shoes to get a good fit. Do not be so foolish or green as to start out to march wearing new shoes or the light shoes ordinarily used by civilians, or low shoes, or patent-leather shoes. Keep the marching shoes well oiled to keep them soft and pliable. If they get full of sand on the march wash out the inside on reaching camp and then hang on a couple of pegs overnight to drain. They may feel cool and clammy in the morning, but they will be clean and soft. Never place the shoes near a fire, or in the sun, to dry as it makes them hard and stiff.

34. Keep your hair short. Long hair and a long beard in the field generally means a dirty head and a dirty face, and favors skin diseases, lice, and dandruff.

Do not let others spit on the floor of your tent or quarters.

Be careful of any discharges from the horse, nostrils, eyes, etc. Always wash carefully after grooming, and before eating.

35. Do not let any part of the body become chilled.

as this very often is the direct cause of diarrhœa, dysentery, pneumonia, rheumatism, and other diseases.

36. Wet clothes may be worn while marching or exercising without bad results, but there is great danger if one rests in wet clothing, as the body may become chilled.

37. Do not sit or lie or sleep directly on damp ground, as this is sure to chill the body.

38. When hot or perspiring or when wearing damp clothes, do not remain where a breeze can strike you. You are sure to become chilled.

39. Every day, if possible, hang your blanket and clothing out to air in the sun; shake or beat them with a small stick. Germs and vermin do not like this treatment, but damp, musty clothing suits them very well. Wash your shirts, underwear and socks frequently. The danger of blood poisoning from a wound is greatly increased if the bullet first passes through dirty clothes.

40. Always prepare your bed before dark. Level off the ground and scrape out a little hollow for your hips. Get some straw or dry grass, if possible. Green grass or branches from trees are better than nothing. Sleep on your poncho. This keeps the dampness from coming up from the ground and chilling the body. Every minute spent in making a good bed means about an hour's good rest later on.

41. Avoid the food and drink found for sale in the cheap stands about camp. The quality is generally bad, and it is often prepared in filthy places by very dirty persons.

Do not drink water from any source until it has been declared safe by the company commander. If there is any doubt, boil it twenty minutes first. Keep everything out of your mouth that may be unclean, straws, toothpicks, etc.

42. The use of intoxicating liquor is particularly dangerous in the field. Its excessive use, even at long intervals, breaks down one's system. Drinking men are more apt to get sick, and less liable to get well, than are

their more abstemious comrades. If alcohol is taken at all, it is best after the work of the day is over. It should never be taken when the body is exposed to severe cold, as it diminishes the resistance of the body. Hot tea or coffee is much preferable under these circumstances.

43. **A Few First-Aid Rules.**—The bandages and dressings contained in the first-aid packet have been so treated as to destroy any germs thereon. Therefore, when dressing a wound, be careful not to touch or handle, or expose unnecessarily, that part of the dressing which is to be applied to the wound.

44. A sick or injured person should always be made to lie down on his back, if practicable, as this is the most comfortable position, and all muscles may be relaxed.

45. All tight articles of clothing and equipment should be loosened so as not to interfere with breathing or the circulation of the blood. Belts, collars, and the trousers at the waist, should be opened.

46. Do not let mere onlookers crowd about the patient. They prevent him from getting fresh air, and also make him nervous and excited.

47. In case of injury, the heart action is generally weak from shock, and the body, therefore, grows somewhat cold. So do not remove any more clothing than is necessary to expose the injury.

48. Cut or rip the clothing, but do not pull it. Try to disturb the patient as little as possible.

49. Do not touch a wound with your fingers, or a handkerchief, or with anything else but the first-aid dressing. Do not wash the wound with water. Otherwise you may infect the wound.

50. Do not administer stimulants (whisky, brandy, wine, etc.) unless ordered to do so by a doctor. While in a few cases stimulants are of benefit, in a great many cases they do positive harm, especially where there has been any bleeding.

51. The heart may be considered as a pump, and the *arteries as a rubber* hose, which carry the blood from the

heart to every part of the body. The veins are the hose which carry the blood back to the heart. Every wound bleeds some, but, unless a large artery or a large vein is cut, the bleeding will stop after a short while if the patient is kept quiet, and the first-aid dressing is bound over the wound, so as to make pressure on it.

52. When a large artery is cut the blood gushes out *in spurts* every time the heart beats. In this case it is necessary to stop the flow of blood by pressing upon the hose somewhere between the heart and the leak.

53. If a vein be cut the blood is darker colored and *flows steadily,* and the flow will be stopped by pressing between the cut and the extremity, that is somewhere beyond the leak away from the heart.

54. This pressure may be applied temporarily by the thumbs pressing through the flesh down against the bone, and thus closing the artery or vein.

55. Another way, and more permanent, is to apply pressure by means of a tourniquet. Place a pad of tightly rolled cloth or paper, or any suitable object, over the artery. Tie a bandage loosely about the limb over this pad, and then insert your bayonet or a stick, and twist up the bandage until the pressure of the pad on the artery stops the leak. Twist the bandage slowly and stop as soon as the blood ceases to flow, in order not to bruise the flesh or muscles unnecessarily.

56. A tourniquet may cause pain and swelling of the limb, and if left on too long may cause the limb to die. Therefore, about every half hour or so loosen the bandage very carefully, but if the bleeding continues, pressure must be applied again. In this case apply the pressure with the thumb for five or ten minutes, as this cuts off only the main artery and leaves some of the smaller arteries and the veins free to restore part of the circulation. When a tourniquet is painful, it is too tight, and should be carefully loosened a little.

57. A broken bone is called a fracture. The great danger in the case of a fracture is that the sharp, jagged

edges of the bones may stick through the flesh and skin, or tear and bruise the arteries, veins, and muscles. If the skin is not broken, a fracture is not serious, as no germs can get in. Therefore, never move a person with a broken bone until the fracture has been so fixed that the broken ends of the bone cannot move.

58. If the leg or arm is broken, straighten the limb gently, and if necessary, pull upon the end firmly to get the bones in place. Then bind the limb firmly to a splint to hold it in place. A splint may be made of any straight, stiff material—a shingle or piece of board, a bayonet, a rifle, a straight branch of a tree, etc. Whatever material you use must be well padded on the side next to the limb. Be careful never to place the bandages over the fracture, but always above and below.

59. Many surgeons think that the method of binding a broken leg to the well one, and of binding the arm to the body is the best plan in the field, as being the quickest, and one that serves the immediate purpose.

60. With wounds about body, chest and abdomen you must not meddle, except to protect them when possible without much handling, with materials of the packet.

61. The symptoms of *fainting, shock,* and *heat exhaustion* are very similar. The face is pale, the skin cool and moist, the pulse is weak, and generally the patient is unconscious. Keep the patient quiet, resting on his back, with his head low. Loosen the clothing, but keep the patient warm, and give stimulants (whisky, hot coffee, tea, etc.).

62. In the case of *sunstroke* the face is flushed, the skin is dry and very hot, and the pulse is full and strong. In this case place the patient in a cool spot, remove the clothing, and make every effort to lessen the heat in the body by cold applications to the head and surface generally. Do not, under any circumstances, give any stimulants or hot drinks.

63. *In case of freezing* and frostbite the part frozen,

which looks white or bluish white, and is cold, should be very slowly raised in temperature by brisk but careful rubbing in a cool place and never near a fire. Stimulants are to be given cautiously when the patient can swallow, and followed by small amounts of warm liquid nourishment. The object is to restore the circulation of the blood, and the natural warmth, gradually and not violently. Care and patience are necessary to do this.

64. Being under water for four or five minutes is generally fatal, but an effort to revive the apparently drowned should always be made, unless it is known that the body has been under water for a very long time. The attempt to revive the patient should not be delayed for the purpose of removing his clothes or placing him in the ambulance. Begin the procedure as soon as he is out of the water, on the shore, or in the boat. The first and most important thing is to start artificial respiration without delay.

The Schaefer method is preferred because it can be carried out by one person without assistance, and because its procedure is not exhausting to the operator, thus permitting him, if required, to continue it for one or two hours. Where it is known that a person has been under water for but a few minutes, continue the artificial respiration for at least one and a half to two hours before considering the case hopeless. Once the patient has begun to breathe, watch carefully to see that he does not stop again. Should the breathing be very faint, or should he stop breathing, assist him again with artificial respiration. After he starts breathing, do not lift him, nor permit him to stand, until the breathing has become full and regular.

As soon as the patient is removed from the water, turn him face to the ground, clasp your hands under his waist, and raise the body so that any water may drain out of the air passages while the head remains low.

Schaefer Method.—The patient is laid on his *stomach, arms* extended from his body beyond his head, *face turned to one* side so that the mouth and nose do not *touch the ground.* This position causes the tongue to fall forward of its own weight and so prevents its falling back into the air passages. Turning the head to one side prevents the face coming into contact with mud or water during the operation. This position also facilitates the removal from the mouth of foreign bodies such as tobacco, chewing gum, false teeth, etc., and favors the expulsion of mucus, blood, vomitus, serum, or any liquid that may be in the air passages.

The operator kneels, straddling one or both of the patient's thighs, and faces his head. Locating the lowest rib, the operator, with his thumbs nearly parallel to his fingers places his hands so that the little finger curls over the twelfth rib. If the hands are on the pelvic bones, the object of the work is defeated; hence the bones of the pelvis are first located in order to avoid them. The hands must be free from the pelvis and resting on the lowest rib. By operating on the bare back it is easier to locate the lower ribs and avoid the pelvis. The nearer the ends of the ribs the hands are placed without sliding off the better. The hands are thus removed from the spine, the fingers being nearly out of sight.

The fingers help some, but the chief pressure is exerted by the heels (thenar and hypothenar eminences) of the hands, with the weight coming straight from the shoulders. It is a waste of energy to bend the arms at the elbows and shove in from the sides, because the muscles of the back are stronger than the muscles of the arms.

The operator's arms are held straight, and his weight is brought from his shoulders by bringing his body and shoulders forward. This weight is gradually increased until at the end of the three seconds of vertical pressure upon the lower ribs of the patient the force if felt to be heavy enough to compress the parts; then the weight is suddenly removed; if there is danger of not returning the hands to the right position again they can remain lightly in place, but it is usually better to remove the hands entirely. If the operator is light, and the patient is heavy, the operator can utilize over 80 per cent. of his weight by raising his knees from the ground, and supporting himself entirely on his toes and the heels of his hands—the latter properly placed on the ends of the floating ribs of the patient. In this manner he can work as effectively as a heavy man.

A light feather or a piece of absorbent cotton drawn out thin and held near the nose by some one will indicate by its movements whether or not there is a current of air going and coming with each forced expiration and spontaneous inspiration.

The rate of operation is 12 to 15 times per minute, and should not exceed this; the lungs must be thoroughly emptied by three seconds of pressure, then refilling takes care of itself. Pressure and release of pressure—one complete respiration—occupies about five seconds. If the operator is alone he can be guided in each act by his own deep, regular respiration, or by counting, or by his watch lying by his side; if comrades are present, he can be advised by them.

The duration of the efforts at artificial respiration should ordinarily exceed an hour; indefinitely longer if there are any evidences of returning animation, by way of breathing, speaking, or movements. There are liable to be evidences of life within 25 minutes in patients who will recover from electric shock, but where there is doubt the patient should have the benefit of the doubt. In drowning, especially, recoveries are on record after two hours or more of unconsciousness; hence, the Schaefer method, being easy of operation, is more likely to be persisted in.

Aromatic spirits of ammonia may be poured on a handkerchief and held continuously within 3 inches of the face and nose; if other ammonia preparations are used, they should be diluted or held farther away. Try it on your own nose first.

When the operator is a heavy man, it is necessary to caution him not to bring force too violently upon the ribs, as one of them might be broken.

Do not attempt to give liquids of any kind to the patient *while unconscious.* Apply warm blankets and hot-water *bottles as soon* as they can be obtained.

CHAPTER XXV

HORSEMANSHIP

Not only as the very cornerstone of cavalry training, but necessary to the mounted men in all arms, and of interest to many who love horses, this chapter is added.

1. A *cavalryman* means a trooper and his horse together. The failure of either breaks the combination, so both are important, and their welfare must be the especial and constant care of their leader. But even then the success and efficiency of the combination depends on their mutual training, their ability to work together harmoniously in carrying out the will of the leader. The training of the horse and keeping him fit and efficient are necessarily matters that rest largely in the hands of the individual rider himself. And if he have the heart of a cavalryman it will be his greatest pleasure to care for his horse and to develop his powers, courage and cleverness by faithful and intelligent handling.

2. For the American service, which contemplates the hasty training of recruits and volunteers on the outbreak of war, a system of horsemanship is required that may be learned by both horse and man in a reasonable time. Such a system is set forth in our Cavalry Drill Regulations, which teach enough to make good cavalrymen. It is the product of long practical experience in training the most efficient cavalry in the world. If one has time and interest to go beyond this practical horsemanship, it is a most agreeable pastime, and worthy any gentleman's leisure. It should appeal particularly to the citizen soldier, for a ride on a well trained horse of high spirit will refresh the most jaded nerves, the vitality and spirit of the horse giving them renewed vigor and exhilaration.

3. *The first* thought in dealing with horses is to *realize that the* rider's disposition or temper is usually

communicated to and reacts upon the horse, and it is therefore to their mutual interest to preserve calmness. For example, let a man find himself mounted on a rough trotting horse on the march, if he loses his temper, and yanks and spurs the horse, instead of improving conditions he will be well punished by the added roughness and nervous irregularity of the horse's gait. And how often we see a nervous horse grow calm under the quiet control of a sympathetic hand; and a perfectly trained animal become fairly wild under the constant irritation of a rider who has no sympathy or understanding in controlling him.

4. In the first lessons care should be taken to develop the confidence of the beginner by progress suited to his capacity and experience, which will exempt him from falls or other accidents. Some instructors seem to think it clever to subject the beginner to humiliation and possible accidents by requiring him to ride difficult horses at first. Many believe the rider gains fearlessness only when he finds that he can be thrown without being hurt. This may be true of a certain type of men. But it is generally most important that the beginner first acquire confidence in himself and *in his ability to control* this unaccustomed and really powerful animal that he finds beneath him. His first lessons should be given not only on quiet horses, but in the saddle rather than bare back. Having gained confidence and something of balance and control he can later perfect his seat by riding bare back or without stirrups.

5. The instructor must give *individual instruction,* for as a rule generalities will not apply. He can best do this by riding beside first one recruit and then another, correcting their mistakes in a quiet conversational tone of voice. And during all this instruction the men must be riding *at ease*; for if they be required to ride at *attention* you will find that this introduces a rigidity and stiffness that are entirely incompatible with the relaxed muscles and freedom of movement necessary to acquire a good seat. They should not even be required to maintain any

given distance between troopers during the first lessons, when all their attention is needed for acquiring proper seat and hands. Enough that they all move in the same direction at slow gaits around the track. If conditions warrant, it may be well even to introduce the element of having fun. The recruit should certainly learn to enjoy riding, and if enjoying himself, will unconsciously loosen up and find himself riding with a secure seat before he knows it. A relaxed supple body is essential to a good seat.

6. After the trooper has gained confidence and some ability it is well to have him ride different horses, even at the same drill, as each horse has its own peculiarities as to gait and control, and the trooper needs a wide experience to make him a good horseman. With the limited time available, he must not expect to accomplish this in ranks only. He must ride whenever he can, being his own instructor after he has learned the principles in the squad work. In acquiring a good seat, each man has to solve his own problem.

The best gait for acquiring the cavalry seat is riding straight ahead at a trot, and this exercise may often be taken to great advantage out of doors on country roads, the instructor riding alongside the column keeping in touch with the work of the individuals.

7. The following rules must be so thoroughly known as to become second nature to the horseman, and so genuinely accepted that even when alone and unobserved it would never occur to him to violate one of them. Practically all the disabilities of horses in service arise from the violation of some one of these rules.

1. Never threaten, strike or otherwise abuse a horse, particularly about the head, which will make bridling and handling much more difficult.

2. Before entering his stall, always speak to the horse gently, and then go in quietly, preferably on his near side.

3. Never take a rapid gait, until the horse has been warmed up by gentle exercise.

4. *Never put* up a horse brought in a heated condi-

tion to the stable or picket line, but throw a blanket over him, and rub his legs or walk him until cool. When he is wet, put him under shelter, and wisp him until dry.

5. Never feed grain to a horse when he is heated, or very tired and hungry. In the latter case he will bolt it, half masticated. Hay will not hurt him, however warm; and he cannot bolt it unchewed, however hungry.

6. Never water a horse when warm, unless his exercise is to be immediately resumed; and then resume at a quiet gait, until the water has had time to pass into the water sac, a few minutes.

7. Never throw water over any part of the horse when heated.

8. Never allow the horse's back to be cooled suddenly, by washing, or even removing the blanket at once on coming in.

9. To cool the back gradually, the blanket may be removed and replaced with a dry fold next the horse; the wet side folded in, so the combined sweat and dust will not bake into hard caked mud in the direct rays of the sun.

10. Never take a fast gait down hill, nor on hard road surfaces, if it can be avoided.

11. In going up steep hills, assist your horse by holding much of your weight by grasping his mane and lifting.

12. In watering, always remove the curb bit, and see that he has clear water, and a chance to drink quietly.

13. Above all, never use the bridle reins as an aid to keeping your seat.

8. Adjustment of Equipment.—It is of first importance that all the articles of equipment be properly adjusted and fit the conformation of the horse. The great advantage of the blanket is that by folding it in different directions you can always present a clean surface next to the horse's back. The trooper should be instructed that it is his duty thus to fold the blanket in field service. For use in garrison, where the blankets may be kept clean by washing, they may be always folded uniformly so as to show the troop mark in the rear corner on the near side.

Every trooper should be taught in practical instruction to whip out a saddle blanket so that it is clean, and then to fold it accurately, and to be sure that there are no wrinkles in any of the interior folds. This method of folding and the method of placing the blanket on the horse's back, best explained in practical instruction, are both the result of long experience. There is a good reason for each move, for the exact position of each finger, and efficiency can best be attained by exact conformance with each little thing prescribed.

9. The proper adjustment of the watering bridle bit is important, the same for the bridoon of the double bridle. They should just touch the corners of the horse's mouth, without wrinkling the lips.

10. The men should know by name the pommel and cantle, the coat straps, the quarter straps and cincha, their rings and safes, the stirrup, stirrup strap and hood, and the cincha strap, and all the parts of the bridle.

11. In saddling be sure to raise the blanket slightly under the pommel arch. The exact seat of the saddle on the horse's back is generally controlled by the conformation of the horse. Your greatest care should be not to put it too far forward up on the withers, which will not only interfere with the freedom of movement of the horse's forehand, but by inclining the seat of the saddle to the rear, will put the weight of the rider too much on the cantle and result in saddle sores under the rear ends of the saddle bars. Another caution is to see that the length of the cincha is such that at least two or three inches are left between the quarter strap safe and the cincha safe, to avoid making a sore by pinching the flesh between the safes. You will often find the cincha too long for this, and every one should be familiar with the method of shortening the cincha by weaving into it a round stick, picking up the individual strands and making the loops on the outside so as to leave a perfectly smooth surface next the horse. In fact in all adjustment of equipment you are trying to get the largest bearing surface possible in each

case, and this surface always clean and smooth and applied with as nearly equal pressure throughout as possible. It is pinching, or unequal pressure at some one point, or the rubbing of carelessly adjusted parts of the pack, that generally cause saddle sores. Beginners generally cinch too tight. The conformation of the horse influences this, and only experience can show just how tight the cinch should be. Cinch him just snugly, do not try to cut him in two.

12. Learn these principles for fitting the saddle: There must be no pressure on withers, shoulder blades, backbone, or loins. The weight of the whole load must be carried on the ribs, evenly distributed over the surface from the play of the shoulder blade to the last true rib, and directly supported by the broad back muscles placed there by nature apparently for this purpose.

13. Having once ascertained the proper length of stirrup for yourself by actually riding in the saddle, then when you dismount take the exact measurement of this length on your own arm by holding the bottom of the stirrup against your body, in your arm pit, the stirrup leather stretched underneath your outstretched arm, observing where the tips of your fingers reach; and thereafter when you are about to use a new horse and saddle, you may intelligently apply this measure to determine the length of the stirrup before mounting. A big barreled horse will require a shorter stirrup than a thin one.

14. In unsaddling always remove the saddle over the croup. A good cavalryman is outraged when he sees a careless trooper dragging a packed saddle directly off to the near side over the horse's back, made sensitive by the long continued pressure and heat resulting from carrying the saddle.

15. In handling the equipment when off the horse a good trooper is always careful to protect the bearing surfaces of his saddle and blanket to keep them clean and smooth.

16. In **bridling,** take the reins in the right, the *crownpiece in the* left hand; approach the horse on the near side, speaking to him reassuringly, passing the right hand along his neck; slip the reins over his head and let them rest on his neck; take the crownpiece in the right hand and the lower left branch of the bit in the left hand, the forefinger against the mouth piece; bring the crownpiece in front of and slightly below its proper position; insert the thumb into the side of the mouth above the tush; press open the lower jaw, insert the bit by raising the crownpiece, with the left hand draw the ears gently under the crownpiece, beginning with the left ear; arrange the forelock, secure the throatlatch, and then the curb strap, taking care not to set them too closely.

The mouth piece of the curb bit, which should fit the width of the horse's mouth, rests on that part of the bars (the lower jaw between the tushes and molars) directly opposite the chin groove; the curb strap should then lie in the chin groove without any tendency to mount up out of it on the sharp bones of the lower jaw. This position of the mouth piece will be attained for the majority of horses by adjusting the cheek straps so that the mouth piece will be one inch above the tushes of the horse and two inches above the corner teeth of the mare.

The throatlatch should admit four fingers between it and the throat; this prevents constriction of the windpipe or pressure on the large blood vessels.

The curb strap should fit smoothly the chin groove, and be loose enough to admit one or two fingers when the branches of the bit are in line with the cheek strap.

17. The whole subsequent success in managing the horse will depend largely on the proper adjustment of the bit and curb strap. The adjustments herein described are absolutely correct and necessary, particularly that of the curb strap. Where a curb chain is used you must see that the links lie perfectly flat and are not kinked. The best method of testing the correctness of the adjustments about the bit is for the rider to take hold of the bit reins and draw them quietly and firmly to the rear, watching the bit and curb strap to see that they act properly,

the strap taking hold smoothly in the chin groove, and the horse responding to the pressure you are applying by yielding his jaw to the rear. Every horseman should understand the theory of the curb bit, that it is designed as a lever, the fulcrum being the chin groove and the point of the resultant pressure being the bars of the horse's mouth, the power being applied at the end of the lever arm which is the lower branches of the bit. The horse will give way *from the hurt,* and the bit hurting him on the upper surface of his lower jaw, he carries his head to the rear away from it. An improper adjustment that makes the curb strap or chain hurt him beneath the jaw, causes him to carry his head to the front away from the hurt, to throw his head up when the bit is brought in play. In this way an improperly adjusted bit has often given a horse the almost incurable habit of constantly throwing his head when the bit is used.

18. **In Unbridling,** hold the weight of the bit and the bridle in the right hand at the crown piece while the left hand gently disengages the bit from the horse's mouth, as you lower your right hand; the careless trooper neglects this, allowing the bit to drop out and thus often striking the corner teeth of the horse.

19. **To Pack Saddle.**—The details of this must be learned in practical instruction, from men of experience; and should be thoroughly familiar to the trooper before field service is undertaken. When the troop is to march in the morning, there will be no time for giving instructions; and the horse may be incapacitated for further service, by one day's march under an illy packed saddle.

20. **To Lead Out.**—The trooper grasps both bridoon reins with the right hand, back up, six inches behind the bit, forefinger separating the reins; then, holding the hand well up and firm, leads his horse, without looking at him, to take his place in the ranks. He should lead into this line from far enough in rear so he may come straight up into his position, at right angles to the front, one yard from the man on his right.

If the horse resists being led, take the reins from his neck and with the ends in the left hand, lead as before. Never face the horse, unless you want to stop him. When leading through a low or narrow doorway, where he is likely to rush, quiet him by voice or hand caress; or even walk backward facing him, one hand hold of each rein.

21. To Mount.—The actual process of mounting should be learned practically, the points being to maintain control of the horse, to avoid displacing the saddle by pulling it over toward you, and to bring your weight into the saddle gently, by lowering your body into the saddle quietly with your leg muscles.

It is a perfect nuisance at drill to have certain horses stepping about, and even rushing to the front, while the trooper is executing *Prepare to mount;* and even more horses have the bad habit of starting off the instant the rider settles into the saddle. These habits may be easily corrected, and every man should make it his business to see that they are corrected. A little patience and time once devoted to teaching the horse to stand quietly, not only while you are mounting, but after you are mounted, and until you have given him the correct signal to move forward, will teach the horse to do this, and he will continue thus to stand quietly if, whenever you mount him, you will always see that he does not start off until you give him the signal. The trouble is that when men mount individually, and not by command, they invariably let the horse move off at will, and do not take pains to see that he stands until they give him the signal to go.

22. Position Mounted.—Learn these fundamental rules and their reasons; you will find them most helpful.

1. Body balanced in middle of horse's back, where horse motion is least communicated to the rider, and weight is most easily carried by the horse.

2. Head erect and square to the front, eyes sweeping the horizon; otherwise your body will incline forward, and you will miss the rare pleasure of the ride.

3. Chin slightly drawn in; to prevent the head and shoulders drooping forward.

4. Shoulders square and well thrown back, and chest pushed out; to allow the rise and fall of the shoulders in the trot to *expand* the chest, rather than to contract it, as happens if shoulders droop to the front.

5. Back straight, above the waist line; to assist in keeping shoulders back and head erect.

6. Back curved, *convex to the rear,* below the waist line; this opens the vertebræ of the lower back bone, and makes it a *spring,* to take up the thrust of the horse motion. This makes the close seat in the trot reasonable and comfortable, while the rigid spinal column with the vertebræ closed makes it almost impossible. This giving way to the rear with the lower part of the back is absolutely essential to suppleness and a good seat, and can be done without effecting the erect carriage of the upper part of the body.

7. Rein in each hand, coming in under little finger and going out over forefinger, held by pressure of the thumb, reins bearing equally on the horse's mouth; to assure sitting squarely in the saddle, faced exactly to the front.

8. Buttocks bearing equally on saddle, the seat being as flat as possible; to increase friction, and make easier the preservation of the seat by balance.

9. Legs stretched by their weight alone, hanging naturally, the flat of the thighs and knees bearing on the horse equally; to add firmness to the seat, and a more enduring connection with the horse.

10. Legs from knee down to hang vertical and free; that they may be used in controlling the horse, without deranging your seat.

11. Feet resting in natural position in stirrups; which brings the calf of your leg into gentle contact with the horse's sides, without allowing your heels to touch the horse, unless desired for use in control.

12. The body from the hips up should be movable, and should, in a measure, yield to the motions of the horse;

from the hips to the knees, immovable and close to the horse; from the knees down, movable.

13. The arms move freely at the shoulders to avoid communicating the motion of the body to the reins; the hands oscillate slightly with the motion of the horse, but otherwise they are stationary, except to direct the horse.

14. During the earlier lessons, the position of the recruit is necessarily one of constraint. He should make every effort to relax, and acquire suppleness as soon as possible.

15. No man can be said to be a good horseman who has not a firm, well-balanced seat; it is therefore of the utmost importance; it will assist the horse; the want of it will impede the horse's actions, and make sore backs.

16. The great importance of acquiring a seat and balance quite independently of the reins cannot be overestimated. You should exercise frequently in riding without reins, hands carried in the lap, practically the same position as with reins; not with arms folded, which gives a different balance.

23. Holding the Reins.—In using the double bridle, the position of the reins, when in both hands, is with the snaffle or bridoon rein coming in under the little finger in each hand, the bit rein coming in above the little finger between it and the third finger. The bight carried as heretofore.

24. In taking the reins in the left hand, the left hand is carried back up, the bridoon reins are outside, the bit reins inside. From left to right in the hand comes first the left bridoon rein outside the little finger, next the left bit rein between the little and third fingers, next the right bit rein between the third and second fingers, and then the right bridoon rein between the second and first fingers. The bights of the reins are kept distinct, so as to be readily picked up by the right hand in adjusting the reins and assisting in using one bit or the other. The bight of the bridoon rein goes out over the forefinger, held down by the thumb; the bight of the bit rein over the second finger between it and the first finger. The right hand, unless occupied with the saber, pistol or rifle, is carried near the left hand, going to its assistance whenever necessary.

Adjustments are made by the right hand on the bight, pulling the rein through the relaxed fingers of the left, and regrasping with the left.

In retaking reins in both hands, you have but to insert the little finger of the right hand back up, between the two right reins as they come into the left hand, grasp them and turn both hands back out.

25. The Bit.—The curb bridle alone has practically been discarded by all horsemen. Where but one bit is to be used most horsemen prefer the snaffle to the curb. Some troops are so well trained that they execute even the mounted combat exercises with precision and control, using the snaffle bit only. The theory of the curb bit in the service was to make sure by brute force of the control of even an untrained horse by an untrained rider. This idea has now given way to the application of intelligence and understanding in his control.

26. The Spur.—The use of the spur as an aid, is like the addition of a sting to the leg pressure. You must use it intelligently, and only after having first applied the normal aids. Having applied the proper amount and kind of leg pressure, if the horse does not respond continue the pressure, turn out your toes and apply the sting smartly. Thereafter the horse will very likely respond to the leg alone. The main use of the spur is to let the horse know you have it on. If you neglect to wear it, the old soldier horse knows it and will take advantage of you. Its use as a punishment should be rare, and never brutal.

It is not worn by beginners until their seat is assured, unless to cure them of the bad habit of trying to stay on the horse by hanging on to him with their heels.

27. The Saddle.—Beginners should take their first lessons not only on quiet horses, but in the saddle. When *they have learned* something of balance, and can control *their horses, and* can keep their seats without assistance from their hands, it will be time to develop the natural seat by riding, first without stirrups, and then *bare back*. The only question as to this form of training is one of *time*. It is splendid if you can afford the time, but a cavalryman has to learn to be a soldier as well as a horseman, and if time is limited, work in the saddle alone will advance him more rapidly, and well enough, though not so thoroughly. Stirrups are crossed in front of the pommel, for "mounted exercises" with the saddle instead of bareback, and for practice in riding the trot without stirrups—this latter to get the horse well up into the man's crotch, and the man's seat well down on the horse.

28. The Aids.—The next step is to learn how to control the movements of the horse, how to make him understand what you want him to do. This is done by the application of the "Aids."

Before attempting to learn to use them, get the following picture clear: The half ton mass of the horse, supported in front by the forelegs, behind by the hind legs, animate with powerful muscles and generally a Christian spirit; and the rider sitting on top of the middle of this, to control it by the aids, the reins controlling the fore hand, that which is in front of the rider; his legs controlling the haunches, that which is behind him. And inasmuch as whenever the horse moves, his whole body is involved, there is required a proper coördination between the applications of the reins and the legs, to avoid demanding conflicting movements of the horse's extremities.

The rider is now ready to mount a well trained horse, which will respond readily to the aids, where he will rapidly gain facility in their proper use, the horse being the teacher. Meantime he may learn the following, and after he has acquired the habit of instinctively using the aids correctly in harmony with each other, he may begin to control horses not so well trained.

29. The reins serve to prepare the horse to move, and to guide, support, and halt him; their action should *be gradual and in* harmony with that of the legs.

In using them, the arms should have free action at the shoulder; when a light pressure on the bit is desired, the action of the hand should be at the wrist; for greater pressure, the elbow should be carried back, *but without raising the hand.*

The horse is guided by pressing with the rein, bringing it to bear, against the side of his neck; he moves the forehand in the direction away from this pressure.

In riding, the bridle hand should be kept steady and ought not to move with the body; it should merely oscillate with the motion of the horse's head; at the same time it must be kept light, for the bit causes pain if pressed constantly on the mouth, destroys its sensibility, and makes the horse's mouth hard.

The hand is light when there is an almost imperceptible alternate feeling and easing of the hand in harmony with the motion of the horse, by which the delicacy of the mouth is preserved, and the horse made to carry himself light.

That hand is best which, by giving and taking properly and keeping constant touch of bit, controls the horse with the least force, and will best preserve the mouth.

As a rule, it is recommended that recruits ride with one rein in each hand; this will prevent the bad habit of holding the left shoulder advanced.

30. **The legs** assist the reins in controlling the horse. Closing them quietly and firmly, particularly near the knees, serves to steady him. Closing the lower legs equally, with slight pressure, prepares him to move, or if moving, keeps him up to the hand. Closing the lower legs with elastic pressure at the same time releasing the forces of the forehand, urges him forward; if done in conjunction with restraint of the forehand by the bit, it assists him to halt in equilibrium. Pressure with one leg only, causes him to move his haunches in the direction away from this pressure. All pressures designated to incite motion must be given with elastic muscular action. As *much* delicacy of touch may be developed here, as in using

the reins. A dull clinging pressure, or thumping with the heels, is deadly.

31. **Forward.**—The first movement to learn is to start the horse from a halt. As in all movements, the preliminary step is to "gather the horse," by slightly closing the legs; and feeling the mouth, by bringing a gentle pressure on the bit. Equivalent to saying to the horse, "Get ready, wake up, we are going to move, get yourself in hand to do it smartly." It helps the horse to collect his forces, to get into an equilibrium from which he may move collectedly in any required direction. At the instant you want the horse to move, yield the pressure on the bit, and simultaneously close the legs with equal elastic pressure, until he steps off. This is the first of the movements of the horse you must learn how to control with precision in order to participate in an accurate close order drill. It is not to let the horse start when he gets ready—when he sees the adjoining horses start. It is so to control him that he will step off at the command **March**, as do the men in the dismounted squad. So, having gathered his forces, brought him to attention at the preparatory command, you put the *necessary muscular elasticity* into the pressure of your legs behind the girth to lift him forward at the command **March.** Thereafter you use only such pressure as is necessary to keep him up to the desired gait. The amount of pressure necessary to start him depends on the temperament of your horse. You will soon learn it in each case. Use both legs uniformly. Never kick or thump him.

32. **Halt.**—This is the next movement to learn, and this may be from any gait, increasing the force of the aids as necessary. First gather the horse without slackening the gait, then at the desired instant rein in, by gradually and firmly bringing the hands toward the body, turning them on the wrist and carrying the elbows slightly to the rear *without raising the hands;* at the same time closing the legs to bring his forces under him. When he has halted relax the hands and legs. Remember the pressure of

the legs, which is so important and yet so often neglected, and their steadying the horse until he is firmly established in the halt. Experiment with this leg pressure and satisfy yourself of its value. You can halt a trained horse with your legs alone. The wonderful Numidian light cavalry of Hannibal's army rode bareback and not a single strap on their horses.

33. **Changing Direction.**—This is the next movement to learn, and done on the arc of a circle of two yards radius, is the fundamental movement for the individual trooper to be used throughout all drills, turning his horse on the circumference of a circle twelve feet in diameter, and not allowing him to change his gait. It requires hands and legs; the horse's feet should track on the circle, the hind feet in trace of the fore. To turn to the right the horse is first gathered, then at the command of execution your legs give the forward impulse to the mass of the horse. As he steps off the left rein is brought against the left side of his neck and guides him into the turn to the right. It may or may not be necessary to use your legs further, depending on the action of the horse. Remember it is required only that he keep up the uniform gait around the arc of the circle in the desired direction. You may need to use both legs to urge him on, you may need to use the left to keep him from swinging his haunches too far around turning rather on the forehand, you may need to use the right leg a little more to the rear than the left to keep him on the circle. As the turn is completed, cease application of the aids used in turning and move off straightened out in the new direction.

34. **Backing.**—Keep a firm seat, hold both legs close, rein in firmly and gradually until the horse yields and steps to the rear; then immediately yield the hand and relax the legs; apply them again before he actually stops, and thus by alternate give and take, keep him moving continuously. A quiet regular execution of this movement is a good test of horsemanship and training. Thus to lead with his hind feet is an unaccustomed action for

the horse and he does not take to it kindly. As the tendency is to drag the hind feet, the haunches should be lightened by shifting the centre of gravity forward as far as possible. This requires that the horse's head be held low, rather than raised, hence the man's hands are low and to the front. And above all the rider's weight should go forward, supporting himself by clasping firmly with his knees. Nothing can be worse than leaning well back and pulling with upraised hands, yet we often see this exhibition. When the horse yields and steps back, release the pressure of the bit to encourage him. Watching closely the feel of his body, as you realize that he is about to settle into equilibrium, quietly give him another signal by pressure with the bit and thus by give and take keep him moving quietly and steadily.

The legs must be held in instant readiness to check any movement of the haunches to either side. It is not difficult to teach a tractable horse to back accurately on a figure eight of two yards' radius, and is good practice in controlling the movements of the haunches by your legs.

35. **The Trot.**—This requires an application of the same aids as "Forward," but with more elastic force, the exact amount depending on the willingness of the horse. He must respond instantly, to make drills of precision possible, and it is for each man to see that he puts the requisite force into his signal. To sit the trot in the military close seat, free from horse motion in the hands, arms, and shoulders, has been the pride of American cavalrymen. It requires balance and also relaxed muscles, taking up the horse motion in your flesh and in the give and take of your lower backbone and the knee and ankle joints. The rider is at one with his horse, their two bodies moving as one, and therein comes the exhilaration of long rides at the trot. Here comes the first temptation for the recruit to maintain his seat by hanging on the reins, ruining the horse's mouth. It is better that he ride with a slack rein without any touch, or that his horse be led and he carry his hands in his lap, until he is so secure in his

balance that he will not want to pull on the reins to maintain his seat. There is no continuous grip of the legs in maintaining this seat—tired muscles will ultimately make such a seat impossible. The grip is taken instinctively when emergency makes it necessary.

The practice of " rising to the trot " is constantly gaining in favor, and is permissible at all times. It is often a relief to both horse and rider. If you use it, observe this one caution. When the rider rises to the trot, the horse is carrying the rider's weight entirely on the one diagonal pair of legs on which he rises. It is only fair to the horse that the rider equalize this by shifting from time to time to the other diagonal. Unless you consciously do this, you will find yourself rising constantly on the same leg.

36. **Decreasing the Gait.**—This requires the same aids as executing the halt from a walk not forgetting the pressure of the legs. The force of their application is measured by the response desired; and is released into a steadying force only, as soon as the desired result is obtained. The same principle applies in the use of the aids in all changes of speed, either faster or slower, in breaking from a halt into a trot, and in halting from a trot, it is a question of the requisite degree of force to be put into the application of the same aids described above.

37. **The Gallop.**—Here is the gait constantly demanded of the horse in the fast troop and squadron drills of precision, and the necessary gait for the quick sure maneuvering of cavalry in the presence of the enemy in mounted combat. For either purpose, horse and rider should be perfectly at ease in this gait, sure of each other and themselves, devoid of excitement and under quick, sure control. This requires much practice in individual work at this gait, until man and horse are so familiar and at home with it as to take it as a matter of course. Yet Post Regulations generally forbid a trooper ever to ride at a gallop out of ranks, and but few opportunities are *ever given him for* training in individual horsemanship at *a gallop. A grave* mistake, which invariably results in

confusion, excitement, and all manner of breaks at the fast drills, and renders skillful, daring maneuvering in the presence of the enemy all but impossible.

Men should be taught first how to handle their horses in the canter and then in the gallop. Then they should be encouraged to work at these gaits, though never on hard roads that will pound up the horses' legs.

In this gait the man should sit deep into the saddle, completely relaxed, his body swinging freely with that of the horse. It is here that he "polishes leather" as he slides on the seat of his saddle. Sitting the horse properly this gait is most comfortable, is delightful; and it is a poor rider whose body rises from the seat of the saddle at the gallop, generally due to stiffness of the backbone and loins, or too much gripping with the legs.

In a later analysis of the horses' gaits, we will describe in detail the movements of his feet in galloping "true," "false," and "disunited." The important thing now is to learn to distinguish by the feel, whether galloping true or false (you will have no trouble in telling when disunited), and to know how to put him into the lead he should have. A good rule for remembering the *correct lead* is that when galloping in a circle the forefoot on the inside must come down last. This is reasonable, since in galloping on a circle to the left as the feet come down in succession each will strike just a little more to the left than the one immediately preceding it. Hence if he be galloping *false* the right forefoot will strike the ground to the left of the left forefoot, which is liable to trip him or make him lose his balance. This makes it necessary that the rider know how he is leading, and be able to put him into the correct lead before turning him at all sharply.

38. To take the gallop from a trot, gather the horse, then bring his haunches under him by closing your legs, and reining in with a firm light pressure; this accomplished, support him with the right rein against his neck, and press the left leg with vigor; these aids put him over the left hind leg, and release the right fore and hind legs, so they naturally lead in the gallop. As soon as he rises, release both rein and leg, and use the aids to steady him in the gallop, keeping him up to the bit. These are, of course, reversed to give him the opposite lead. If he does not respond readily in taking the correct lead, put him into the gallop on the arc of a small circle.

39. **The canter,** is a short collected gallop; the horse's forehand is raised, his whole figure is collected and shortened, his neck bowed and his head drawn in, and he moves by the spring of the haunches. It is used in the riding-hall exercises and mounted gymnastics, and is the gait for beginners, preliminary to the gallop.

It is particularly important in learning the work of these fast gaits that the trooper first get it right himself, from practice with a well-trained horse, under the observation of an instructor keen enough to be able to tell him when he is doing the right thing and when the wrong.

40. **To Turn on the Fore Hand.**—Described to the right. Reverse the aids to turn to the left. Having gathered the horse, close the right leg behind the girth until the horse steps to the left with his hind feet, keeping him straight and preventing him from stepping off with his fore feet by supporting him with the left leg and the reins; relieve the pressure of the right leg as soon as the horse obeys. Continue application of these means until the horse has turned to the required degree; the right forefoot should remain in place. If the horse does not obey the pressure of the legs at first, open slightly the right rein.

This movement has its sole application in the pivot's execution of the wheels by fours at drill. It is of no other use, and is bad for cavalry discipline, as it is directly opposed to freedom of movement, and has only an injurious effect on the horse, particularly at the fast gaits. It will undoubtedly be executed on a movable pivot in the revised drill regulations. In executing it as herein described, give yourself closest attention to watching the horse's forehand, to check with the reins any movement he starts to make to the front or to either side, and with the legs any movement to the rear. By giving attention you can feel his body start in the direction he is planning to step, and if you are holding the aids ready for instant application, you can use them quickly enough to stop him from going wrong. As long as the wheel by fours is part of our drill it is absolutely necessary that every trooper be able to execute this turn on the forehand with perfect precision.

41. **To Turn on the Haunches.**—Increase the aids for gathering him, until his haunches are well under him, keep him up to the bit, then with the left rein force his forehand to turn to the right, pivoting on the hind foot. This requires close attention, and control of his forces, particularly with the legs to prevent his backing, or swinging his haunches to the left. It is not used at drill, but is of particular value in individual work where an abrupt turn must be made at speed, as in playing polo. You will find few horses doing it accurately from which to learn. You may later train your own horse to do it.

42. **The Passage.**—Used in drill when required to gain ground directly to the right or left without moving to the front, as in closing in to the right when in line at a halt. All cavalry horses should have no difficulty in learning it. Gather the horse, and incline his body slightly to the right, keep him up to the bit with both legs, give pressure with both left rein and left leg, to make him move with forehand and haunches simultaneously to the right. His body remains inclined. He sidesteps along two parallel tracks, each left foot passing in front of its mate as he crosses his legs in the steps. Close attention is necessary to keep his forces working truly.

43. **Jumping.**—Horses and men must know how to jump safely in field service. Attention must be paid to guarding against the horse rushing his jumps, and against disgusting him with jumping by repeating too often at a hurdle, and by requiring jumps that are too high.

The horse that is having his first experience in jumping is not sure of his balance, does not know how to handle his feet, and is consequently fearful of falling. He should be practiced without a rider, until he is quite at ease in the jumps. Even then his first experience with caring for the added weight of the rider should be with a good rider who will not shift his weight all over the place.

44. Where possible it is of the greatest advantage to a man and horse to begin by taking natural obstacles out of doors in country trails—this is really important. They appear part of nature and to take them appears reasonable. By care the horse learns to like to jump rather than to hate it—too often the result of riding hall training. Another caution: so many men end every lesson by demanding a jump so high that the horse refuses it, leaving this his last impression. By continually raising the jump as the horse accomplishes each in turn, they exceed his power of accomplishment. Then they quit, the horse tired and disgusted. You can see how harmful this is.

45. In military jumping the prime consideration is security—the soldier must stay with his horse. It is believed that in the excitement of campaign any horse who has learned how to jump reasonable obstacles in peace training will take any necessary jumps. The seat recommended, therefore, is one that gives security rather than the seat of the horseshow exhibitor, whose purpose is to help the horse over the last possible inch of a formal jump in carefully prepared conditions, indifferent tc whether or not he loses his own seat.

For high jumps 3 feet and for broad jumps 8 feet are considered the maximum limits for regular training. Come at the high jump at a quiet collected gallop, at the broad jump at an extended gallop. The horse must have free use of his head and forehand in both jumps, in taking off and in landing.

46. A horse that hurries or rushes will become an uncertain and unsafe jumper. If impatient in going up to the bar, he should be halted, reined back, halted and tried again until he takes it cooly.

Horses are first taught to jump the ditch, then the *bar.* They are equipped with the watering bridle, and are led by a steady horse that is accustomed to jumping, or this instruction may be given on the longe.

The horses are taken in the open field and practiced at jumping shallow ditches, fallen logs, very low fences, etc. If the horse refuses to take the jump, the instructor may give aid with the whip, but in such a way as not to terrify him. If the horse be timid it is advisable to place the bar on the ground until he passes over it without alarm. Great discretion must be used in applying the whip, and the horses will not be required to jump repeatedly over the same thing or at the same place.

If the rider carry a switch or whip, it should be applied at the point of the shoulder to make him raise his fore feet, and at the instant he is braced or crouched for the jump.

47. *Suppleness* of your body is the fundamental consideration for your seat; picking the horse up between your legs at the jump the consideration for control. Your muscles are elastic—in reality you jump with your horse. Yes, there is the secret of success—you are *sure* you are going to take the jump, you put your whole heart in it, and the horse responds. Often a man approaches his jump, uncertainty written plainly on his face. His horse senses it, and by " refusing " avoids disappointing him.

48. Keep your jumps low enough and your horse quiet enough so man and horse enjoy the exercise and gain perfect confidence and control. While each man will learn jumping through experience, and most instruction will be given by correcting faults exhibited at the hurdle, you may well start the recruit at the low jumps with the following rules:

Take the reins in both hands, hold the hands low, and never let them fly up during the jump.

Clasp the horse with the calves of the leg in rear of the cincha, and never let the feet swing to the front, weight in the stirrup, during the jump or upon landing.

Control the horse with the legs and reins until assured he is going to jump, then give him free rein so as not to touch his mouth again, until after he has landed.

Sit down deep into the saddle with the loins perfectly supple, and keep a close seat throughout the whole exercise. As soon as familiarity allows it, learn to sway slightly forward to assist the horse in the takeoff, and slightly backward to relieve him in landing. Let the use of the whip at the jump be a last resort all but never used.

49. **Across Country Work.**—As early as practical in training, after seat and hands have been acquired, the beginner's instruction should be begun in negotiating varied ground, to teach him how to care for himself and his horse in the various conditions he will meet in campaign. This instruction should be progressive, negotiating more and more difficult obstacles, until he can be trusted to work alone.

The following are fundamental principles to be observed:

1. The gait must be so regulated as to husband a horse's strength; and a rapid gait never taken up until the horse has walked and warmed up gradually.

2. The gaits should be varied to suit the grades and ground surface, but each gait should be held to the normal speed prescribed. Fast work up hill demands effort and is exhausting, down hill it is liable to cause injury, especially on hard surfaces. The length of each period for the faster gaits may be increased progressively, watching the horse to avoid taxing his powers.

3. Seek the best footing for the horse, the soft ground beside metaled roads, etc. A smooth, hard surface is better, however, than a soft one that is very uneven or heavy.

4. In particularly difficult conditions, the rider may well dismount and lead. The horse should be trained to this, and given as much freedom in it as possible, as he will know better how to negotiate the difficulties. Even when the rider remains mounted, he should always give the horse his head in negotiating difficult ground.

5. In ascending steep slopes, give free rein, carrying

your weight forward and supporting it by grasping a lock of the mane half way up the horse's neck. Go quietly and directly up short hills. If it be a long steep slope, and the footing be secure enough, go up diagonally. Down hill, go straight; your weight well back, holding by clasping your thighs.

6. The question of whether to jump an obstacle or go round it will be one for you to determine. With packed saddle the horse will often climb through a ditch with less exertion than jump it. A soft bottom may make jumping necessary.

7. At the close of the work always walk to the stable, far enough to ensure his arrival with a dry skin and normal respiration.

8. Encourage the horse to keep a fast flat-footed walk, giving him free use of his head, by extending and swinging which he assists himself forward. A free-for-all walking race to the stable after dismissing each days' drill is a good method for this training.

50. Gaits.—Every horseman should be interested in having a knowledge of the horse's gaits, at least how many miles an hour he covers at the various prescribed gaits. In the analysis of gaits, he should be able to distinguish at a glance whether a horse is trotting, single-footing or pacing; and in the gallop, on which foot the horse is leading, and whether leading properly or not. Having first learned the analyses of the various gaits, that is, in what succession the feet strike the ground, to learn to distinguish these gaits quickly, the best method is to keep the eye fixed on some one foot, for example the left fore foot, and then observe what foot, if any, strikes the ground simultaneously with it, as the right hind foot would do in the trot.

The walk is a gait of four distinct beats, each foot planted in regular order of succession, *e. g.,* right-fore, left hind, left fore, right hind, and so on. For much of the time three feet are firmly planted on the ground, an admirable condition for powerful draft. In military service, its rate is four miles an hour, and training may increase this; in civilian work, it is much slower.

The trot has two distinct beats; the horse springs from one diagonally disposed pair, left fore and right hind, to the other. The diagonal lines connecting the points of support, left fore to right hind, and right fore to left hind pass practically under his centre of gravity, which makes this a powerful, steady, gait for the horse bearing a burden. Between the beats, all feet are in the air. For military maneuvering the rate is eight miles an hour; for marching, a shade slower; for training beginners, as slow as six miles is advisable.

The pace, " side wheel," in some localities called "rack," is not a military gait, nor suited to bearing loads. It has two beats like the trot, the horse springing from one parallel pair, left fore and left hind, to the other. This gives a sideways lift to the mass, and motion to the rider; and, aimed at destroying equilibrium, requires quick muscular response to restore it. Hence the speed of the gait.

The single foot, also a non-military gait, has four distinct beats, in continuing uniformity of succession like the ticking of a clock. It is the most comfortable gait for the rider, there being no motion to the saddle, either vertical or lateral; but it is hard on the horse being an artificial gait for most American horses. It has been analysed as trotting in front, combined with a fast walk behind, and is characterized by a jerky side motion to the dock.

The canter has three beats. Cantering to the right, the succession would be, left hind to the diagonal, left fore and right hind, to the right fore—from which the horse rises in the next spring. This is a highly collected gait, in military service held at eight miles an hour, and used for instruction and riding hall work; it may be held down to any degree of progression in highly trained horses—" The Kentucky gentleman canters for an afternoon in *the shade of his* own apple tree."

The gallop has four beats, regularly spaced, and separated by a slight pause while the horse is in the air. Galloping to the right, the regular order of succession is left hind, right hind, left fore, right fore. This is galloping "true," with the proper lead. He is galloping "false" when leading with the wrong feet, behind and in front. He is "disunited" when leading differently behind and in front, *e. g.,* leading left behind and right in front. In military service the maneuvering gallop is at twelve miles an hour, the extended gallop at sixteen.

The run is but the gallop extended to high speed. As the speed increases the foot prints come more and more nearly into one straight line in the path of the horse; for each will need to be planted directly in the vertical plane through his centre of gravity, to aid in maintaining equilibrium. This suggests the advantage to the horse of a rider who does not shift his own weight about in the saddle, constantly shifting the centre of gravity of the combined mass of horse and rider.

51. Swimming.—Every opportunity should be taken to train man and horse in swimming. This can be done most easily in crossing a stream, or pond, where the opposite bank is near and plainly visible, so that it will seem reasonable to the horse to swim away from the shore where you have entered the water. In the beginning it will be very helpful if he can see other horses on the opposite bank where he is to land. Be careful that your bridle reins resting on the horse's neck, are always knotted long enough to allow the horse to extend his nose well to the front in swimming, and yet so short as to prevent a loop hanging low enough for him to catch his forefoot in. For your own safety, avoid getting into position where your own horse or another may be tempted to step on you, to help himself out of the water. Until he is accustomed to swimming the horse is very nervous in this exercise, and willing to climb up on anything that he thinks may help him out.

The rider urges the horse forward quietly but firmly, *until off his feet* in deep water; as soon as he is swimming quietly and headed in the right direction, drop the reins, and relieve him of your weight by swimming beside him on the down stream side, your up stream hand hold of the saddle or mane; or, even easier for the horse, drop back and, catching his tail, let him tow you. In the former case you may control his direction by reaching the reins, or splashing water against the side of his head; in the latter you may have no control, and if other horses are swimming near, may be towed in front of another horse, who will try to use you as a stepping stone.

When the horse touches bottom at the landing, he will probably go ashore with ardent plunges, and you will have to be quick to regain your seat. If intending to try the towing process, unbuckle one end of the rein, and as you drop back let its whole length float to the rear, where you may grasp its end, and regain control of the horse as he lands.

Where the horse swims low in front, and you are to ride him, as when armed and carrying the rifle out of the water on your shoulder, slip well back, and sit just in front of the haunches, where the hip bones against your thighs will hold you in place, besides giving you interesting sensations from the powerful thrusts of his legs.

Both men and horses may easily come to enjoy this exercise, and with the horse stripped to nothing but the watering bridle, and the rider without even that, it becomes a healthful, spirit-forming addition to the day's work, especially in hot weather.

52. Training Horses.—You have now learned everything necessary for the trooper on a trained horse. If you aspire to the pleasure of training a horse, study the following until you know it, and have caught its spirit. It is largely a matter of patience, getting acquainted, mutual understanding—in fact of horse sense.

It is impracticable to give here more than the fundamental principles of horse training. The soldier will *then be able intelligently* to do this work under his officer —*and the civilian,* who has time to train horses, will also have time to study the subject in Phillis, or Anderson, or some other of those excellent masters.

53. First remember that the horse is disciplined like a man more by a system of rewards than of punishments. During his training take frequent occasion to reward him by patting, immediately upon his giving proper response to your signal. In fact it is in this way only that he may learn what response to make to a signal. For example, you carry back your right leg and give the pressure calling for his stepping to the left with his haunches. He does not yet know what you want. He may do anything, even kick at your foot which is annoying him. You continue the annoyance, ultimately he steps away from it. You instantly show him that was right by patting him. Then try it again, and again reward him only when he does right. Very soon he associates pressure with your right foot and stepping off to the left with his hind feet. You can see now that the man who pats his horse to quiet him when unruly is destroying his one means of teaching him properly.

54. We consider the horse an animal of a single idea and that he has no reasoning faculties beyond the limits of his experience, and consequently we reason with him by acts alone, his natural movement being away from that which hurts him or excites his fear. Early impressions are seldom forgotten, and it is important that each move be correctly begun. In familiarizing him with objects that excite his fear, the horse should be allowed to smell or touch them with his nostrils, for in a certain sense they are to him what the fingers are to man.

Invariable rules cannot be laid down for the proper training of all horses, as it will be found that each horse requires special treatment.

Horses are trained by the best horsemen, and the men employed in this are selected for their natural fondness for animals, as well as for their patience, coolness, and intelligence.

The horse is made gentle and obedient, and his powers and qualities are best developed by patience, kindness, encouragement, and fearlessness; punishment is resorted to only when necessary, and then only administered immediately after the commission of the offense, that he may know why he is punished. No punishment should ever be administered to the horse in anger. Under harsh treatment he will become timid, then sullen, and at length violent and unmanageable.

Restlessness and impatience frequently arise from exuberance of spirits or playfulness, which must be carefully distinguished from that which arises from viciousness or timidity. When restless, the horse should be handled quietly until he becomes calm; when submissive after punishment, he should be treated kindly.

As one horse is apt to be governed by the actions of another, trained horses that are indifferent to such things should be associated with the new ones when accustoming them to the sights and sounds of unaccustomed service.

The first object to be attained in training the horse is to gain his confidence and render him gentle and tractable. For this purpose, all proper means must be employed, such as feeding, handling, patting him, taking up his feet, etc., and the practice of the longe.

When the horse will quietly allow his feet to be handled and lifted, the trooper should practice gently tapping them to accustom him to the action of shoeing.

The trooper must endeavor to discover the horse's natural inclinations and to gain a knowledge of his abilities, that he may know how to take advantage of these qualities.

Every action of the trooper should tend to induce full confidence that no harm is intended and nothing but kind treatment is to be expected.

The new horse should have at least two hours work in the open air each day.

His first lessons will be in going ahead, in handling his feet and legs properly, in acquiring a control of his forces under direction. Long quiet trips at a walk and trot do much to steady and control him.

By stages he will be brought to a knowledge of the bit, and reins, and of the saddle, and gain the ability to balance his forces with the weight of a rider on his back.

Great stress is laid on *using your voice* to quiet, to reassure, and to control your horse during training. So few men will do it, and yet it is particularly helpful.

55. As the horse is an animal of *one idea,* if he gets the idea of resistance along any one line, you but make him more stubborn by opposing that idea directly. Better to quit that absolutely, and take up some entirely different thing, however simple, that you are sure he will do. Thus direct his mind from disobedience, and by easy stages of controlled action bring him up to the disputed point again.

56. Do not go from one thing to another so rapidly as to disgust him, nor repeat the same one too frequently. And the greatest fault and most common is to "dub around" giving half-hearted indifferent signals and not demanding perfect obedience.

First decide exactly what you intend the horse to do, be sure it is reasonable, then give the proper signals unmistakably; and then give your entire attention to seeing that they are accurately obeyed. You see it is but a repetition of training a recruit in obedience of orders,—the important part lies with the man who gives the orders.

Care of the Horse

57. This must be your constant personal interest. If your horse fails you, you are likely to have to walk. Fortunately he is a sturdy animal of regular dependable habits, capable of great hardship when reasonably treated. In campaigns he is our uncomplaining better half, and as we must require tremendous exertion from him in emergencies, we must give him every attention to bring him to the issue prepared to meet it.

You may not appreciate the importance of thorough grooming, his daily bath, until you have seen a neglected horse blossom as a result of receiving it. You will be jealous of your mount getting good drinking water, and his fair share of the feed. You will think first of his comfort on the halts and when you make camp.

58. Sickness and Injuries.—In your experience these troubles will come from some violation of the simple rules given in this chapter, for feeding, watering, adjusting equipment, and handling the horse in his work. *You must learn these rules and constantly apply them.* Then you won't have to know how to treat disease and injury. It is impracticable to expect you to remember their symptoms and treatments when experience so rarely gives you practice in them; so why bother to learn them. Fortunately these troubles are infrequent in peace service. If sickness does come apply the general rule to take off the horse's equipment, give him rest, keep him warm, and meantime send post haste for the veterinary, or at least the farrier, who will know what else to do. In actual service many a military surgeon has helped out with advice, where the veterinary was not available.

59. Shoeing.—The matter of proper shoeing is of vital importance, and generally not well understood by civilian horse shoers. Every horseman should know, and see that his horse has the benefit of the following principles:

In preparing the foot for the shoe it should be made to approximate as nearly as possible to the state of nature. The knife must never be used on the bars or the frog. "Opening the heels" is pernicious, and results in contracted heels. The dry horn of the outer surface of the walls, sole and frog is essential to preserving the moisture and elasticity of the hoof. Hence the wall must never be rasped down to fit the shoe. A hot shoe must never be applied to the foot. Ragged pieces of the frog may be carefully removed with the nippers.

The great consideration is that a smooth flat surface of the walls of the hoof come in full contact with a smooth flat surface of the shoe; that the sole does not touch the shoe; and that the shoe be so adjusted and fastened as to allow the foot to expand from the quarter back to the heel as the horse's weight comes upon it in the trot, the frog taking up much of the shock by contact with the ground.

Shoes should be removed about once a month; and the lightest shoe that will wear this long is the best. The length of the shoe should be such as to come even with the bulb of the frog.

60. In **grooming** the comb is used mostly to clean the brush—after every few strokes. It is never applied to the mane or tail, and to the horse only when necessary to loosen caked mud, matted hair, etc.

The brush is used with a straight arm stroke in the direction of the hair, the man standing well away from the horse and putting his weight into it—which accounts for the uniform arm and shoulder development noticeable in regular cavalrymen, and is necessary to make the bristles of the brush actually take hold of the skin and clean it.

Stables should immediately follow the day's mounted work, when the horse's skin may be cleaned most thoroughly. This is followed by necessary care of the saddlery. Horses are merely brushed off for appearance's sake in the morning before drill. In order that it may not be overlooked, the first move in grooming is to examine and clean the horse's feet; the last is to wipe out with a suitable cloth the horse's eyes, ears, nostrils, and dock.

61. Feeding.—Horses should be fed three times a day, one-third of the grain each time; in garrison, one-third the hay at noon, the rest at night; on the march, all the hay at night. Hay and grain should be free from dust, and this may be accomplished by winnowing in a wind. Where grazing is resorted to, the early morning hours are most favorable. When the horse is very hungry take the edge off his appetite with hay or grazing, so he will not bolt the grain when he gets it. In feeding in camp or on the march, instead of the troop marching to the forage with empty nose bags and having them filled for each in turn as prescribed, a much better method, which obviates the hardship of this long delay for the men, is for the stable crew to have the nose bags filled prior to each time for feeding. The troop is then marched up and each man takes his nose bag and then takes his place opposite his horse, and when all are ready they feed simultaneously at the command of the first sergeant. This latter is important to avoid the fighting among the horses on the line which results from one horse being fed while the one adjoining him is not.

62. Watering.—Horses may best have free access to water. Where this is impracticable they should be watered regularly, before feeding or at least two hours thereafter, on the march, whenever opportunity offers.

The manner in which watering is conducted is a good test of cavalry discipline. It should be supervised by an officer, done quietly, going and returning at a walk. In watering, to give the slower drinking horses full opportunity to drink all they want, it is necessary that all the horses at the drinking place should be kept there quietly until the slowest horse has satisfied himself, when all are taken away by direction of the man in charge. The horse is such a gregarious fool that if a neighboring horse leaves the water he will try to leave with him, going away still thirsty if necessary, for fear he will miss something.

When watering a few at a time, the rest of the troop should be halted and held well away from the watering place; and those that have finished drinking taken well away to form the troop again. Both these precautions tend to keep the horses quiet.

63. Additional Rules.—At every halt on the road, or if your horse shows unexpected lameness, examine his feet to see if he has picked up a stone between the shoe and frog or in the cleft of the frog. Upon the completion of the march, or any hard trip, let normal circulation of the back under the saddle be restored gradually by leaving the saddle on for a time, with slightly loosened cincha; and letting the back cool gradually. After the back is cooled out, hand rubbing with cool salt water will be helpful. If puffs appear, keep them wet with salt water, and so arrange the pack next day as to relieve them from pressure. This can generally be done by folding back the saddle blanket into a double thickness nearby, thus relieving the pressure at the affected point.

Exercise at least two hours daily is essential to keeping a horse conditioned. This may be done by leading where enough riders are not available, but care must be taken to keep the horse well balanced by leading as much on the near side as on the off. Leading is better than turning loose, as it teaches the horse to look to man for the fun of exercising, rather than to getting it free from control.

In saddling up be particularly careful that your blanket is clean, and that every fold is free from creases. If later your saddle slips, remove it entirely, and carefully readjust the blanket before cinching. Two men should work together in doing this.

POINTS OF THE HORSE

64. An intelligent horseman naturally takes an interest in the *points of a horse*. And he cannot even discuss a horse without knowing at least the names of the "points." These should be not only learned by the men, but the squad leader should assemble his men about a living horse and discuss its points with them.

65. An interesting chapter could be devoted to a discussion of the good and bad points of a cavalry horse, but it is believed that such discussion would exceed the scope of this chapter. Enough to state that the first essential of a horse for service is *stamina* and the second *good temper* which will generally be accompanied by *good digestion* and *boldness;* and to quote the following discussion on "conformation and points" from "The Army Horse in Accident and Disease."

"The forehead should be broad and not bulging; the eyes full, clear, and prominent, with a mild expression, and not showing any of the white; the muzzle not too large, as a coarse, large muzzle indicates ill breeding; the nostrils large and open; the face straight; and the lower jaw with ample width between the two sides, for the development and play of the larynx (Adam's apple) and windpipe, and, in addition, to allow the head to be nicely bent on the neck.

"The ears should be of a medium size, set well on the head and held erect.

"The parotid and submaxillary regions should be free from large glands and without any loose skin at the lower part of the throat.

"The neck should be of moderate length, clean and not too narrow at a point just in the rear of the throat; a short, thick neck does not allow of free movement from side to side; and a long, slim neck is apt to be too pliable. A neck with concave upper border, known as 'ewe neck,' is unsightly. The jugular channel or furrow should be free from enlargements. The point of the shoulder should be well developed. The point of the elbow should not be turned in, as the horse in that case is apt to turn his toes out; the opposite conformation results in the condition called 'pigeontoed.'

"The forearm should be long and muscular; the knee broad, and when looked at from the front, much wider than the limb above and below, but tapering off backward to a comparatively thin edge. A bending of the knee backward is called a 'calf knee,' and is very objectionable. The opposite condition is known as 'knee sprung.'

"The cannon should be of uniform size; if smaller just below the knee than elsewhere (a condition called 'tied in'), weakness is to be expected.

"The fetlock joint should be of good size and clean; the pasterns of moderate length, and forming an angle of between 45 and 50 degrees with the ground or floor.

"The foot should be of moderate size; a flat foot or one too narrow at the heels is objectionable.

"The relative proportions of the shoulders and the exact shape desirable vary considerably in cavalry and artillery horses. When speed and activity are essential, as in the cavalry horse, the shoulder should be oblique (sloping), as this shape gives elasticity to the gait of the horse. For the artillery horse, working in harness, a more upright shoulder bears the pressure of the collar more evenly, and when the collar is at right angles to the traces the horse exerts his strength to the greatest advantage. The front line of the shoulder must be clearly marked.

"The withers should not be thin and high, as this conformation will allow the saddle to slip too far forward and the pommel to rest upon the withers. The bars of the saddle will be forced against the shoulder blades, causing irritation and inflammation, and preventing free motion of the shoulders; the constraint causes stumbling. On the other hand, the withers should not be low or thick, as the saddle is then apt to pinch them.

"The breast and chest should be of moderate width and have considerable depth; the narrow chest indicates weakness, and the wide, heavy chest is suitable for heavy-draft horses only.

"The capacity of the lungs is marked by the size of the chest at the girth, but the stamina will depend upon the length of the back ribs. The barrel should not be broad back of the cinch, as it would cause the cinch to slip forward and chafe the body just back of the point of the elbow. The opposite conformation would allow the saddle and cinch to slip backward. The back should be short, with muscles well developed, and the upper lines of the back bending down a little behind the withers and then swelling out very gently to the junction of the loins, which can hardly be too broad and muscular.

"The last rib should be placed close to the point of the hip, as this is an indication of strength, and the horse is more easily kept in good condition than one having the opposite conformation.

"A slightly arched loin is essential to the power of carrying weight: the concave or 'sway-back' is therefore a sign of weakness; the much arched or 'roach back' is almost sure to give uneasy action from its want of elasticity.

"The hips should be broad, smooth, and muscular.

"The croup should be well rounded, should slope slightly downward and be of moderate length; both the straight, horizontal croup and the drooping croup are unsightly; when the croup droops and also becomes narrow below the tail, the conformation is known as 'goose rump' and is a sign of weakness.

"The dock should be large and muscular, the tail carried firmly and well away from the quarters.

"The quarter (thigh and buttock) and gaskin should be broad. The muscles of the two quarters should come close together, leaving no hollow below the anus; the widely separated conformation is an indication of a want of constitution.

"The hock should be of good size, but clean and flat, and with a good clean point standing clear of the joint. The two hocks should stand well apart, but not enough to give the horse the appearance of being 'bow-legged.' 'Cow-hocked,' so called, is when the hocks stand close together and the hind feet wide apart, with the toes turned out.

"If the hocks stand in, it will be noticed that the stifles stand out, and the reverse. 'Straight hock' and 'crooked hock' are terms used to express the shape of the hind leg as seen from the side; both shapes are objectionable. 'Sickle hock' describes the curve which results from a crooked hock, a short cannon, and a sloping pastern.

"The cannon should be short, not tied in below the hock, and the line from the point of the hock to the back part of the fetlock should be straight.

"The fetlock when bent forward is an indication of weakness known as 'cocked ankle.' The hind fetlocks, pasterns, and feet should correspond to those of the fore extremity, but the pasterns are usually more upright."

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